INTERNATIONAL COMMISSION ON THE HISTORY OF GEOLOGICAL SCIENCES

INHIGEO

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PREFACE TO *INHIGEO NEWSLETTER NO. 28*

This *Newsletter* reports mainly on INHIGEO activities in 1995. It includes information on future INHIGEO Symposia and other conferences, a compilation by INHIGEO Past-President Martin Guntau of the themes and resulting publications of the ten International INHIGEO Symposia from No. X in 1982 to XX in 1995, a Notes and Queries section, Country Reports, Book Reviews, and other items of interest to historians of geology.

With profound regret, we include a Memorial Note for Dr. López de Azcona, the founding member of INHIGEO from Spain. The INHIGEO Board extends its deepest sympathy to Dr. de Azcona's family, friends, and colleagues.

On a personal note, I wish to let all members know that this will be the final INHIGEO Newsletter that I will compile and edit. This year, 1996, I will complete two terms as Secretary-General of INHIGEO and will welcome the election of a new candidate to this position. I have greatly enjoyed serving INHIGEO in a capacity that keeps me in touch with all of you. It has been a special pleasure to receive letters, faxes and E-mail from around the world and then to attend our symposia where I have met at least some of you and matched names with faces. Since the meeting in Washington in 1989, where I first was elected, the world has passed from cold war to warmer peace between the old political East Block and West Block, and INHIGEO itself has changed, through our collective efforts, from a Commission governed by a small group of Full Members, elected for life, to one in which all members are eligible to vote and hold office. I feel certain that our symposia and publications have contributed significantly to the recent worldwide increase of interest in the history of geology. I forsee a bright future for INHIGEO as it gains in strength and influence. To each and every member I send my thanks for your cooperation and my very best wishes for the future.

Ursula B. Marvin
August, 1996

The INHIGEO Board as Confirmed by the IUGS Council for 1992-1996

The XXnd International INHIGEO Symposium, "Volcanoes and History" Naples - Aeolian Islands - Catania, Italy, 1995

The Symposium opened on Tuesday, September 19th, at the historic Osservatorio Vesuviano on the lower slopes of Mt. Vesuvius. Registration began at 8:30 a. m. and the official opening took place an hour later. The first scientific session occupied the rest of the morning and the afternoon. While in Naples, participants stayed in the Hotel Murad at Torre del Greco, a locality that was overwhelmed by flowing lava during the eruptions of 1794, but is, today, a community of attractive homes and gardens built on the steeply sloping base of the mountain.

Themes. The main theme, Volcanoes and History, was divided into six sub-themes, encompassing nearly every aspect of the subject: 1) Historical eruptions: records, iconography, printed books, archaeological data, volcanological studies. 2) History of volcanology from the past to the beginning of present times. 3) Cartography: past and modern criteria of representation. 4) History of scientific instruments and institutions relating to volcanology. 5) The present threat of catastrophe: volcanic risk, prevention and forecasting. 6) Effects of eruptions on society. Papers on these topics were presented in three scientific sessions that were divided into five sittings.

Pompeii and Campi Flegrei. Interspersed with the sessions were field excursions to some of the truly classic sites in the history of geology. The morning of the 20th was spent at Pompeii, where we were shown all the storied features of the excavations, including *in situ* plaster casts of one group of people who had been smothered in the ash (Fig. 1). We also were admitted by special arrangement to an area where we could observe ongoing excavations.

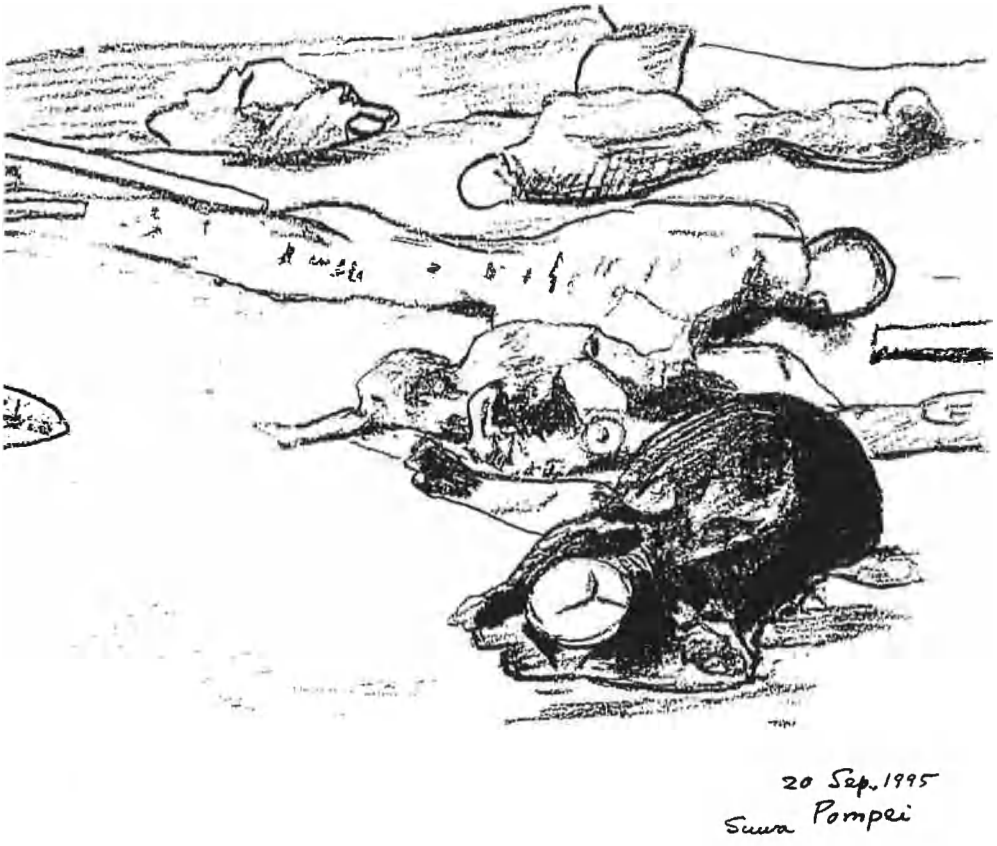


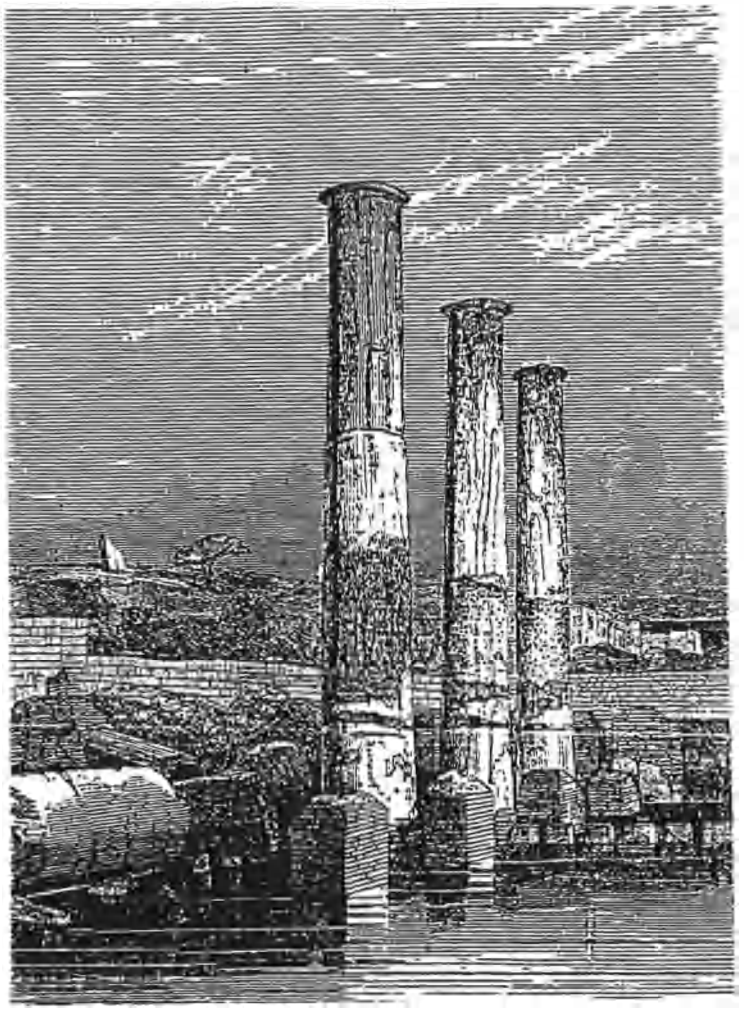
Figure 1. Casts of bodies buried in ash at Pompeii. Prior to excavation, voids where bodies had lain were located by probing through the ash. Casts were made by injecting a plaster-like medium into the voids and then removing the overlying ash. (Sketch by Kanenori Suwa.)

Lunch was served in the open courtyard of a 1st-century villa with walls of Pompeii red decorated with garlands and scenes of licentious gaiety. That afternoon we visited Campi Flegrei, a landscape of inactive craters and calderas that, in 1781, inspired Franz Aepinus in St. Petersburg with the idea that the craters of the Moon might have formed in such a volcanic field. He came to this conclusion as he perused a copy of *Campi Phlegraei*, a sumptuous volume of black-and-white and colored plates of Mt. Vesuvius and its surroundings painted by Pietro Fabris and published in 1776 by Sir William Hamilton, the British Ambassador to the Court of Naples. At Campi Flegrei we walked across the floor of the Solfatara caldera with its sulfurous fumaroles continually emitting clouds of gas and crystals that stain the white walls in hues of yellow, brown, and orange.

The Serapeion at Pozzuoli. After a stop for tea and pastries at an outdoor pavilion, we went on to the Serapeion at Pozzuoli, discovered about 1750 and believed until this century to be the ruins of a temple dedicated to Jupiter Serapis. Today it is recognized as the public marketplace of the city. There stand the three vertical columns, each with a 2.7-meter band around its midsection full of bore holes made by marine mollusks. The sight of these columns, which clearly have stood partly under water for a considerable period, so inspired Charles Lyell with the gradualness of the lowering and rising again of the land at this site (Lyell did not believe in the competing theory of a grand rising and lowering of sea level) that he depicted the columns in the frontispiece of his *Principles of Geology* of 1836 (Fig. 2). This was his prime illustration of the concept that later came to be called uniformitarianism. Our group was admitted to the public viewing area overlooking one end of the excavation, and then, as the local guide warmed to his task, he led us all the way around the embankment to the far side near the columns. From there, we could see that the columns have stood in shallow water once again, long enough for their bases to have become completely encrusted with barnacles. The masses of shells are mostly hidden from view by low walls built to protect the bases of the columns. Do the barnacles signal another, lesser, lowering of the land? Measurements taken since the beginning of this century show that, in that period, the Serapeion has gradually sunk about 60 cm. However, it still stands above sea level and so the flood that brought in the barnacles is thought to have resulted from a late 19th-century drainage channel that unexpectedly diverted water into the ruins. Just before sunset, INHIGEO participants gathered for group pictures taken in front of the Serapeion. That evening, we banqueted at a restaurant on the shore of Lake Averno, thought, in classical times, to be the entrance to Hades.

The Crater of Mt. Vesuvius. On the morning of the 21st we visited the crater of Mt. Vesuvius. Buses drove up a long, winding road affording good views of historic lava flows including the large one of 1944 (Fig. 3), to a stop where postcards and souvenirs may be purchased. Then we passed through a turnstile onto a cindery path for a climb of several hundred yards to the top. The sky was mostly sunny but mists wreathed the summit allowing only intermittent views into the crater, where we caught sight of steam rising from a nearby vent. The mists soon developed into a shower that sent those of us from the first bus scurrying down the mountainside. On our way we met friends from the second bus climbing up. By the time they arrived at the top, the sky had mostly cleared and they reported excellent views of the crater walls and floor. The illustrated and well-referenced Symposium *Guidebook* includes very informative discussions of the excursions to Vesuvius, Campi Flegrei, and Pozzuoli by Antonio Nazzaro, one of the organizers of the symposium.

The Aeolian Islands: the Island of Vulcano. Part 1 of the second scientific session was held at the Osservatorio Vesuviano on the afternoon of the 21st. That evening we boarded an overnight ferry for the Aeolian Islands that cluster in the southeastern part of the Tyrrhenean Sea just north of Sicily. Our staterooms were spotlessly clean and convenient with bunks and every convenience fitted into very small but adequate spaces. In the morning we found ourselves cruising among islands with little villages where we made a stop or two *en route* to the Island of Vulcano--the mythic site where the god Vulcan worked his forge. Explosive activity has occurred intermittently on this Island from 475 B.C. to 1890. The main mountain of Vulcano, with its barren slopes in all shades of ochre and yellow seemed to rise directly out of the sea (Fig. 4). At its base, however, lie tiny villages, including the small port city where we stayed in the Aeolian Hotel, an excellent meeting place equipped with an auditorium, a dining terrace overlooking the sea, and guest cottages amid green lawns and flowering trees. As we checked in we met participants of the previous symposium checking out. Among them we recognized Eugene and Carolyn Shoemaker and Brian Marsden, all of meteorite and comet fame, who had been attending a meeting of Spaceguard, the international organization that is watching the skies for asteroids or comets in dangerously close Earth-crossing orbits and considering options for avoiding catastrophic collisions. From them, we learned that we all



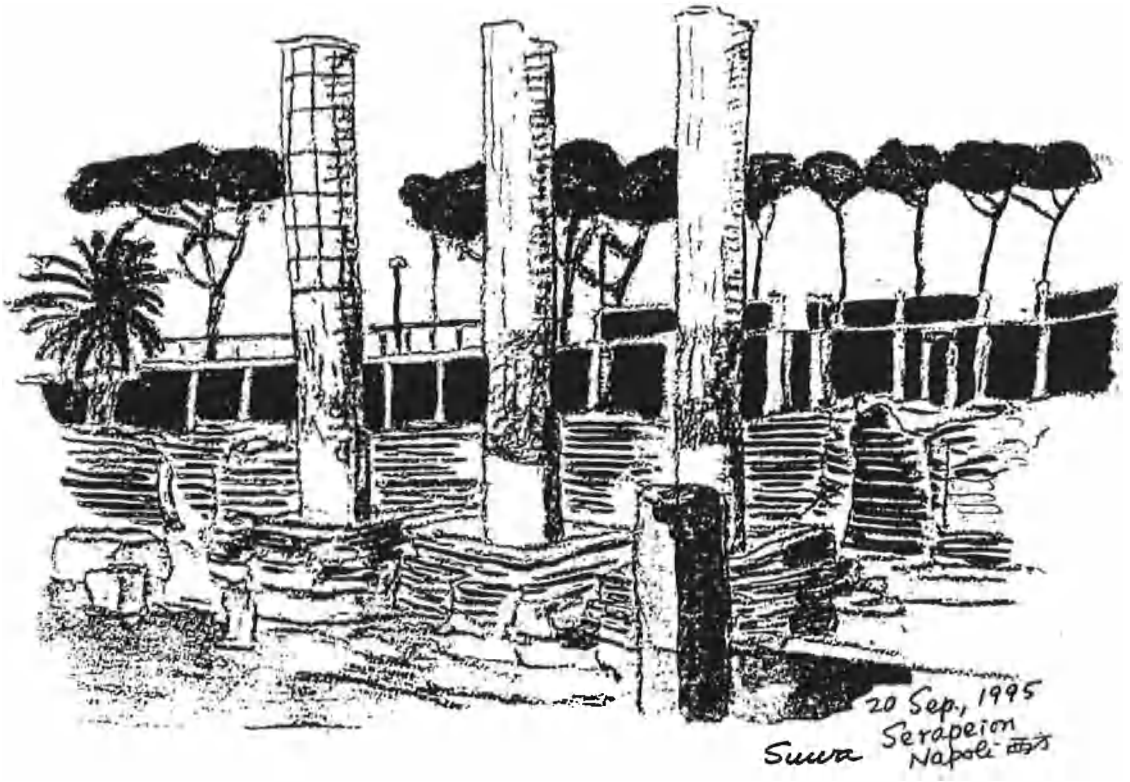


Figure 2. Views of the three standing columns in the Serapeion at Pozzuoli. **Upper:** The frontispiece of Charles Lyell's *Principles of Geology,* 1836. The rough bands are full of holes bored by marine mollusks inhabiting a layer of shallow mud when sea level stood halfway up the columns due to sinking of the land. The bases of the columns were too deeply buried for the mollusks. **Lower:** The columns as they appeared in September, 1995. Note that the tops have eroded away, one column is girded with a metal brace, and the bases of all three are protected by low tile walls. Within these walls, the bases of the columns are encrusted with barnacles (not visible in sketch) that appeared during a temporary flooding of the site. (Sketch by Kanenori Suwa).

Figure 3. Two views of Mt. Vesuvius. **Upper:** The cone as seen from the terrace of the Osservatorio Vesuviano. (Sketch by Kenzo Yagi). **Lower:** The cone and part of the flow of 1944 as seen from the road up the mountain. (Sketch by Kanenori Suwa).

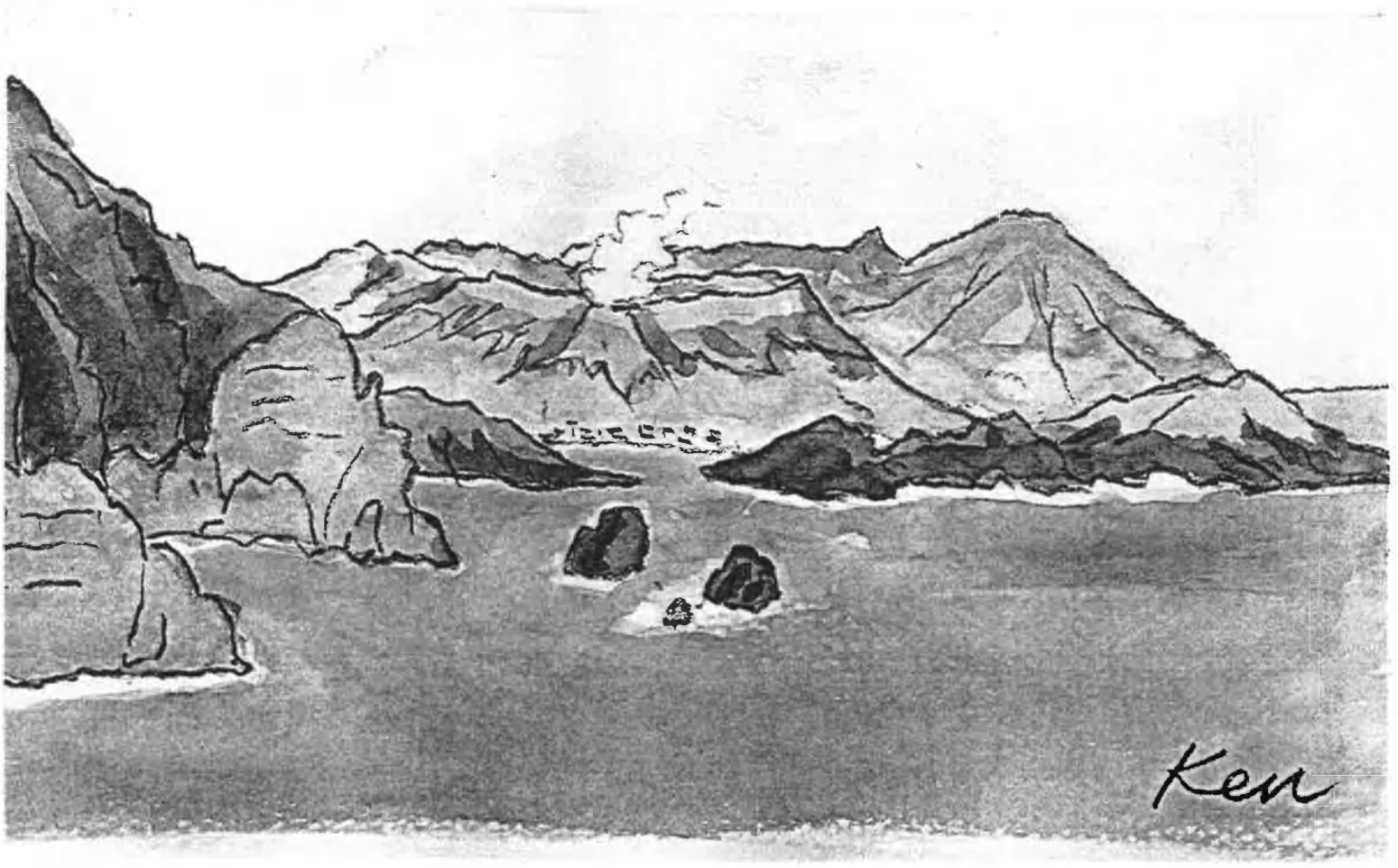


Figure 4. The Island of Vulcano with its fumarolic caldera as seen from aboard the ferry on the morning of September 22, 1995. (From a watercolor painting by Kenzo Yagi.)

can hope to see a spectacular comet, named Hale-Bopp, in 1997 and, of more immediate concern, we also learned how to deal with the threat of mosquitoes in our rooms. Later that morning we attended Part 2 of the second scientific session. In the afternoon most participants climbed the slopes of Vulcano to examine its fumarolic cone, Fossa di Vulcano in the large, brightly-colored Caldera della Fossa. During the climb it was possible to distinguish many of the sequential deposits that built the island. The summit afforded a magnificent view of the caldera and of the other six Aeolian Islands. (One or two participants, however, opted for a cruise to view Stromboli in action at night.) A special sight on Vulcano greeted those who walked from the hotel toward the port, where an expanse of bubbling hot mud was eerily alive with torpid bathers, thickly plastered with gray from head to toe, sitting or lying or slowly turning over as they partook of this natural thermal spa.

Lipari Island. On the next day, September 23, we cruised to Lipari Island where we examined several features of geological and historical interest. One was an old kaolin quarry where hot fumarolic solutions had invaded fault zones and altered the volcanic rocks to fine, white kaolinized earth. Quarrying of this material continued until the late 1950s. We also visited Monte Pelato, a thick cone of pumice that was deposited in two great eruptions that occurred about 580 and 730 A. D. The pumice has been mined for centuries but the last quarries, still in operation, may soon be closed. At nearby Roche Rosse, the eruption of 730 A.D. also gave rise to a 2-km flow of black, glassy obsidian, which has been intensively mined. Local and national concern over the future of the pumice-obsidian deposits of Pelato-Roche Rosse was discussed at the INHIGEO Business Meeting in Catania. The final stop was at the remarkable Archaeological Museum of Lipari which traces the history of the Island from the "Castellaro Vecchio" and "Diana" civilizations beginning about 4000 B.C. to the early Medieval period.

Mt. Etna and Catania. Early on the morning of September 24th, we boarded a ferry to Milazzo, Sicily, where buses drove us up Mt. Etna to a station where we rode to the 3,000-meter level by telepherique. Plans called for a climb to the summit, at 3,323 meters, with its four active vents and views of cones and flows of recent eruptions. However, a raw wind, streaming mist, and occasional showers of cold rain made viewing almost impossible, so we consumed our box lunches in a large hostel and then browsed among the numerous souvenir shops at this stop. After lunch we rode down the telepherique to the buses which took us to Catania with several stops *en route*, including a deep, volcanic cavern beneath part of the city, in which ancient artifacts have been discovered. Two chapters in the Symposium *Guidebook,* describing the excursions in the Aeolian Islands and to Mt. Etna, were written by Giovanni Frazzetta, one of the symposium organizers, and Marco Neri.

We spent the night of September 25th at the President Park Hotel in Catania. The INHIGEO Business Meeting opened at 8:45 the next morning and the third and final Scientific Session began an hour later.

More than 80 participants attended the Symposium from Australia, Brazil, the Czech Republic, France, Germany, Hungary, Iceland, Ireland, Israel, Italy, Japan, Norway, Portugal, Russia, the United Kingdom, and the USA. The Symposium was unusual for its progression from one starting point to a different ending point. This arrangement allowed us to visit many more places than we otherwise could have and to enjoy the relaxed atmosphere of an overnight cruise.

Ursula Marvin

The Business Meeting at the XXnd International INHIGEO Symposium in Italy

President Park Hotel, Catania, 25 September 25, 1995

The meeting commenced at 8:45 a. m., chaired by INHIGEO President, David F. Branagan.

Thirty members and visitors were present. The President conveyed good wishes from various members, who were unable to attend, particularly Vice-Presidents Wang Hongzhen for Asia and Franco Urbani for Latin America.

Membership activities: The President and Secretary-General outlined the structure and activities of INHIGEO, stressing that INHIGEO is a Working Commission of IUGS, and that members are expected to be active researchers, not passive observers of the history of geology. There are currently 132 members from 37 countries, but in the past two years no information has come to the Board from 18 countries. This may be partly the result of changing the structure of INHIGEO to a single level of membership, so that former Full Members for each country no longer have the primary responsibility to submit reports, and many individual members have not yet become accustomed to describing their own activities. Contact with some researchers and groups has also proved to be difficult as international boundaries have changed. To ensure a truly active Commission, the Board recommended that individuals who do not respond to requests for information about their research, or who do not vote in two successive elections should be removed from the membership list. The Chairman especially recommended that members consider nominating some of the active young researchers present at this conference, and others unable to attend, to ensure the continuing vitality of INHIGEO.

Future Symposia: There was discussion on the future program for INHIGEO. The Secretary-General reminded the meeting that INHIGEO would hold symposia at the 30th IGC in Beijing, 4-14 August, 1996, and recommended that all those who could do so should attend. On this occasion a newly-elected Board will take office.

Dr. Hugh Torrens gave first details of the Hutton/Lyell Conference to be held in Britain in July, 1997. Part of this conference will be an INHIGEO meeting. Dr. Ken Taylor pointed out that the IUHPS will be holding an International meeting in Liége, Belgium, immediately preceding the Hutton/Lyell meeting. It is important that INHIGEO maintain links with IUHPS. It was recommended that the President contact the IUHPS group planning the Liége meeting to ask for a session on the history of geology. The Chairman indicated that IUHPS had supported the previous INHIGEO meeting but not this one. [However, on returning home, the Secretary-General received a contribution

from the IUHPS in support of the meeting in Italy. This was used toward publication of the proceedings and was very much appreciated, indeed.]

There was general agreement that no INHIGEO meeting be held in 1998, in view of the considerable meeting activity that will have occurred since 1992. However, Dr. Martin Guntau suggested that the incoming Board should consider co-sponsoring a meeting likely to be held in Germany that year on the topic "The significance of Abraham Gottlob Werner in the 19th century." This theme will considering the matter in the ambiance of the general history of science, rather than dealing specifically with Werner's life which has been well covered in previous meetings.

Notice was also given of various local meetings (including "The History of Mineralogy" conference to be held in Munich in March, 1996) which INHIGEO was happy to support.

Publications: Dr. Nicoletta Morello was pleased to announce the publication of *Rocks, Fossils and History*, the volume of papers from the 1988 INHIGEOSymposium held in Pisa, which had been unavoidably delayed. She mentioned that it would be possible before the end of 1995 to determine if the papers of the present meeting could be published in a single volume, or whether participants should seek publication in technical journals. Dr. Silvia Figueirôa reported the publication in 1994 of *Geological Sciences in Latin America*, the papers of the 1993 INHIGEO Symposium held in Brazil. Dr. Peter Schmidt announced that funding for the publication of the papers from the Dresden meeting in 1991 had been obtained, and that publication would go ahead shortly. It was suggested by the Chairman that, in general, organizers should attempt to publish the papers in advance of the meeting (as was done at the Sydney meeting in 1994), or, otherwise, allow the papers to be dispersed. If published solely in English, native language speakers should be used to edit the papers for those who were not fluent in English.

Heritage: Members from Italy put forward a proposal that the present meeting of scientists and historians from around the world should recommend to the authorities on the Island of Lipari the preservation of the important pumice and obsidian sites there. There was considerable discussion on the matter, and Dr. Endre Dudich indicated some of the difficulties that would be encountered should it be recommended that the site be considered for world heritage, or for world geological significance. The meeting agreed that the Chairman should work from the draft document to prepare a letter from the meeting to the appropriate authorities. [A copy of the letter he sent is on Page 9.]

Vote of thanks: The meeting passed a unanimous vote of thanks to the organizers of the XXnd International INHIGEO Symposium, for the wonderfully successful meeting, involving immense co-ordination, which provided excellent venues, excellent accommodations, fine publications, and a delightful mix of technical sessions and culture and social activities.

The meeting adjourned at 9:30 am

David Branagan, Chairman
Ursula B. Marvin, Secretary-General

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES
INTERNATIONAL UNION OF THE HISTORY AND PHILOSOPHY OF SCIENCE

International Commission on the History of Geological Sciences (INHIGEO)

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1 December, 1995

A LETTER TO THE RELEVANT AUTHORITIES IN LIPARI, ITALY

Dear Gentlemen and Ladies,

At the Twentieth Symposium of the International Commission for the History of The Geological Sciences, held recently in Italy, more than eighty geologists, volcanologists, historians and chemists from many countries of the world participated. We were privileged to visit the Italian volcanic centres of Vesuvius, the Phlegrean Fields, the Aeolian Islands and Etna.

We were particularly impressed with the Aeolian Islands Archipelago which we believe is a geological and morphological structure of international significance.

Of special importance within the island system is the pumice cone and obsidian flow of Pilato-Rocche Rosse on the Island of Lipari, which we were privileged to visit with local scientific experts. These features form an exceptional site for study, and indeed, with proper treatment, might form an important tourist site, as it is a geological site of worldwide importance. However we note that, at present, the site is undergoing considerable alteration, due to both natural erosion and quarrying, and without attention the scientific and tourist value of the site will be damaged, perhaps permanently.

Our Symposium voted that we respectfully draw the attention of the relevant local authorities to these matters. We hope that you may be able to take initiatives to stop the progressive destruction of this quite extraordinary natural scientific site, which is part of the heritage of all mankind. (On a purely practical basis the site might well become an outdoor extension of the very fine Geological Displays of the Lipari Museum, which we were privileged to visit).

Of course, any such initiatives to protect the site would take into consideration the employment, welfare and constitutional rights of the local people.

On behalf of the International Commission for the History of the Geological Sciences (a commission of the International Union of Geological Sciences) I am pleased to offer this letter of recommendation, and to pledge the assistance of the Commission, should you require it in implementing the actions we have suggested.

Yours sincerely,

(Dr.) D.F. Branagan
(President)

INHIGEO SYMPOSIA Nos. X - XX (1982-1995): THEMES AND PUBLICATIONS

A Survey by Martin Guntau, Rostock

During the 22nd Geological Congress in New Delhi in 1964, the Council of the International Union of Geological Sciences (IUGS) made a resolution, following a suggestion from the USSR National Geological Committee, to found a "Committee on the History of Geological Sciences." The founding of this early committee took place within the framework of an international conference on the history of geological sciences that met in Yerevan, Armenia, in June, 1967. Approximately 120 historians of geological sciences representing 15 nations from four continents participated. Thirty-four authorized delegates from the 15 countries worked out the formal constitution of the International Commission of the History of Geological Sciences (INHIGEO). INHIGEO is a working Commission of the International Union of Geological Sciences (IUGS), and it is affiliated with the International Union of the History and Philosophy of Sciences (IUHPS).

Since its founding, this Commission has actively encouraged scholarly research on the history of geology. In 1995 INHIGEO had 131 members from 37 nations. Its primary activity has been the holding of international symposia that have provided forums for an international exchange of ideas on a wide range of topics. Twenty symposia have taken place since the founding of INHIGEO almost three decades ago. Thirteen of these were independent meetings and seven met during the International Geological Congresses which meet every four years. INHIGEO Symposia have been held in Europe, Asia, Australia, and in both North and South America, which testifies to the widespread interest in historical topics.

Inasmuch as the symposia have been held in different countries, the proceedings could not continuously be published in one central location. Furthermore, records of the meetings are widely scattered, so it would seem worthwhile to list the locations and themes of the symposia and the publications that have resulted from them. Some time ago a survey of the first ten symposia was published in an article titled *International INHIGEO Symposia 1967-1982* (Guntau, M., 1983, *INHIGEO Newsletter No. 17*, Rostock, pp. 4-11). The present paper continues the record from 1983 to 1995.

The author wishes to extend his thanks to David Branagan, Endre Dudich, Ursula B. Marvin, Clifford M. Nelson, Peter Schmidt, Kenneth L. Taylor, Ezio Vaccari and Kenzo Yagi for their advice, additions and corrections during the preparation of this survey.

Key to Symbols:

- • Proceedings; volumes or journals with published papers of the symposium
- ◊ Abstracts, excursion guides, reports, newsletter notices
- [ ] Remarks, notes or annotations of the author

Xth Symposium, 1982, 16 -23 August, Budapest, Hungary.

Topic: Development of Geological Mapping and Geocartography in Connection with Progress in Geological Thought. Convener: Endre Dudich, Hungary

Publications

- • E. Dudich (Ed.): "Contributions to the History of Geological Mapping." *Proceedings of the Xth INHIGEO Symposium* 16 - 22 August 1982, Budapest, Hungary. Akadémiai Kiado, Budapest 1984, 442 pp., ISBN 963 05 3616 1 [English]
- ◊ E. Dudich: A X. nemzetközi INHIGEO Szimpózium: "A földtani térképezés és térképkészítés története." In: *Földtani Közlöny*, Vol. 113 (1983), No. 2, p.178 [Hungarian]
- ◊ G. Csíky: Kongresszus a földtani térképezésröl. Magyar Nemzet, 38 (1982), 187, p. 8 [Hungarian]

[For other publications see *INHIGEO Newsletter 17* - 1983]

XIth Symposium, 1984 - 27th International Geological Congress, Moscow, Soviet Union, 4-14 August

ThreeTopics:
Development of Concepts in the Field of Sciences of the Earth. IGC C.21.1.1.

Evolution of Concepts on the Dynamics and Structure of the Earth's Crust and Upper Mantle.
IGC C.21.1.2. Conveners: T. Vallance (Australia), V. V. Tikhomirov (USSR), R. Hooykaas (The Netherlands)

Topic: History of Mineralogy. Conveners: G. P. Barsanov (Soviet Union), M. Guntau (GDR)
XIth INHIGEO Symposium and IGC S.21.2.1.; August 7-9, 1984, Moscow, Soviet Union.

Publications

- *Proceedings of the 27th International Geological Congress, Moscow 1984. History of Geology*. Section C.21, Vol. 21, VNU Science Press, Utrecht (The Netherlands) 1984, 215 p. [English]

◊ 27. Meshdunarodnij Geologitscheskij Kongress. Moskva 1984. *ABSTRACTS*, Volume VIII, Sections 17 to 22, Section 21. History of Geology, pp.442-476; Volume IX, Part 2 (Additional) Section 21. History of Geology, pp. 431-453, *Izdatelstvo "Nauka" Moskva*, 1984 [English, Russian, German]

◊ 27th Session of the International Geological Congress. Section 21. History of Geology. *INHIGEO Newsletter No. 19*, pp. 8 - 11, Budapest (Hungary) 1985

◊ V. V. Tikhomirov, I.G.Malakhova: Section C.21. History of Geology. *27th International Geological Congress. General Proceedings*, pp. 116 - 117, Vneshtorgizdat, Moscow 1987

◊ A. Kaszap: XXVII. Nemzetközi Geológus Kongresszus, Moszkva, 1984. VIII, 4-14. In: *Földtani Közlöny*, Vol. 115 (1985), No. 1-2, pp. 215.220 [Hungarian]

◊ V. Székyné Fux: Beszámoló a XXVII. Nemzetközi Geológiai Kongresszusról, Moszkva 1984 Augustus 4-14. In: *Földtani Közlöny*, Vol. 115, No. 3, pp. 331-333 [Hungarian]

XIIth Symposium, 1985 - In association with the 4th Meeting of the European Geological Societies (MEGS 4) April 11-12, Edinburgh, Scotland, U. K.

Topic: The Influence of Scientific organizations on the Development of Geology (with excursion)
Convener: Gordon Y. Craig (U. K.)

Publications

◊ MEGS 4. The Evolution of the European Lithospere. Edinburgh 9th-12th April 1985, 4th Meeting of European Geological Societies. *ABSTRACTS*. pp. XIII 97 [with 13 abstracts of the XIIth INHIGEO Symposium]

◊ G. Y. Craig: XIIth INHIGEO Symposium. *INHIGEO Newsletter No 19*, pp. 12 -13, Budapest (Hungary) 1985

XIIIth Symposium, 1987, 23 September - 1 October, Pisa and Padova, Italy

Topic: Rocks, Fossils and History (with excursions),
Conveners: Nicoletta Morello, Gaetano Giglia (Italy)

Publications

- *Rocks, Fossils and History*. Proceedings of the XIIIth INHIGEO Symposium Pisa - Padova (Italy), 24 September - 1 October 1987. Eds. Gaetano Giglia, Carlo Maccagni, Nicoletta Morello, 288 pp. Festina Lente, Firenze 1995, ISBN 88-85171-23-0 [English, French]

◊ [Rocks, Fossils and History], XIIIth Symposium, 23rd September - 1st October [1987], Pisa-Padova. *ABSTRACTS*. pp. 45

◊ Excursion Guide in the North-Western Apennines, by N. Morello, G. Giglia, F. Baldacci, G. Plesi. pp.40, [Pisa-Padova 1987]

◊ N. Morello: Rocks, Fossils and History. XIIIth INHIGEO Symposium. *INHIGEO Newsletter No 21*, pp. 12 - 13, Moscow "NAUKA" 1988

◊ J. Hála (Ed.): Rocks, Fossils and History. Italian-Hungarian Relations in the Field of Geology. *Annals of the History of Hungarian Geology*, Special Issue 1 (on the occasion of the XIIIth Symposium of INHIGEO), Serial Ed. G. Csíky, Budapest 1987, pp. 333, ISBN 963 8221 11 9 [English]

◊ G. Csíky: Az International Committee on the History of Geological Sciences XIII. nemzetközi szimpóziuma. Pisa-Padova 1987 szeptember 24.-oktober 1. In: Vol. 12 (1990) pp. 168-174 [Hungarian]

◊ [M.Guntau]: XIII. Internationales INHIGEO-Symposium. In: 3. *Rundbrief, Arbeitskreis Geschichte und Philosophie der Geologischen Wissenschaften der GGW der DDR*, Berlin 1988, pp. 4-5 [German]

XIVth Symposium, 1989, 28th International Geological Congress, Washington, D. C. USA, July 9-19

Four Topics: (with excursions):

The Idea of Time: Changing Concepts of the Antiquity of Man and the Earth (IGC K 1.)
Conveners: Martin Guntau (GDR), Léo F. Laporte (USA), Cecil J. Schneer (USA)

The Trans-Atlantic Exchange of Geological Ideas during the Nineteenth Century (IGC K 3.)
Conveners: Gordon Y. Craig (UK), Endre Dudich (Hungary), Albert V. Carozzi (USA)

Meteorite Impact: Consequences for the History of Geological Ideas (IGC K 4.)
Conveners: Ursula B. Marvin (USA), Wolf von Engelhardt (FRG)

History of Geological Mapping Poster Session (IGC P 33)
Conveners: Karen Cook (UK), Gorton L. Heroes Advise (Ireland), Kenneth L. Taylor (U.S.A.)

Publications

- The Idea of Time - The IGC Symposium. Clad C. Ablation, Jr. (1913-1938) Memorial Issue. In: *Earth Sciences History. Journal of the History of the Earth Sciences Society*, Vol. 8, No. 2, pp. 99-191, 1989 [Proceedings of IGC K 1.]
- Trans-Atlantic Exchange of Geological Ideas in the 19th Century. In: *Earth Sciences History. Journal of the History of the Earth Sciences Society*, Vol. 9, No. 2, pp. 95-162, 1990 [Proceedings of IGC K 3.]

◊ History of Geology. *ABSTRACTS*. All abstracts of the papers and posters on the history of geological sciences (K 1. - K 4. and P 33.) are included in the three volumes of all abstracts (28th International Geological Congress) in alphabetical order by authors.

◊ W. M. Jordan (ed.): *Boston to Buffalo: In the Foot-Steps of Amass Eaton and Edward Hitchcock, Boston, Massachusetts to Washington, D. C.*, June 28-July 8,1989, Field Trip Guidebook T 169. Washington D. C., American Geophysical Union 1989, 99 pp.

◊ W. E. Davies: *Highlights of the Geology and Engineering of the Chesapeake and Ohio Canal*, July 15, 1989, Field Trip Guidebook T 206, Washington D. C., American Geophysical Union, 25 pp.

◊ G. Csíky and Gy. Vitális: *History of Mineral Exploration in Hungary until 1945*. Annals of the History of Hungarian Geology, Special Issue 2 (on the occasion of the 28th IGC and the XIVth Symposium of INHIGEO), Serial Ed. G. Csíky, Budapest 1989, 109 pp., ISBN 963 671 169 0 [English]

◊ D. Balázs (Ed.): *Magyar-amerikai földtudományi kapcsolatok* [Hungarian-American relations in the earth sciences]. Erd, 1989, 84 p. [Hungarian with English abstract]

◊ E. Dudich: Magyarok Amerikában. Magyar közremüködés a 28. Nemzetközi Geológuskongresszuson, Washington, D. C., Egyesült Allamok, 1989 július 9-19. In: *Földtani Közlöny*, Vol. 119 (1989), No. 3, pp. 319-321 [Hungarian]

◊ M. Guntau: XVth INHIGEO-Symposium in Washington (USA) In: *5. Rundbrief, Arbeitskreis Geschichte und Philosophie der Geologischen Wissenschaften der GGW der DDR*, Berlin 1990, p. 5 [German]

◊ U. B. Marvin: INHIGEO Symposia, Field Excursions, and other activities at the 28th IGC. In: *INHIGEO Newsletter No 22*, 1990, pp. 3-6, Cambridge, MA, USA, (for 1989-1990)

XVth Symposium, 1990, October 25 - 31, 1990, Beijing, Peoples Republic of China.

Topic: Interchange of Geoscience Ideas between the East and the West (with excursions)
Organizing Committee: Wang Hongzhen, Shen Zhaoli, Tao Shilong (P. R. China)

Publications

- *Interchange of Geoscience Ideas Between the East and the West.* Proceedings of the XVth International INHIGEO Symposium, October 25 - 31, 1991, Beijing. Eds. Wang Hong-Zhen, Yang Guang-rong, Yang Jing-yi, China University of Geosciences Press, Wuhan 1991, 273 pp., ISBN 7-5625-0611-6/P.212 [English]

◊ XVth International Symposium of the International Commission on the History of Geological Sciences (INHIGEO), 25 - 31 October, 1990, Beijing, China. *ABSTRACTS.* 121 pp., HGGSC and China University of Geosciences, Beijing, 1990 [English]

◊ Meng Xianghua and Wu Ruitang: *The Western Hills and the old Site of Yuan-Ming-Yuan Palace.* Guide to Excursion A (28 October), pp.12, HGGSC and China University of Geosciences, Beijing, 1990

◊ Qiao Xiufu, Wu Ruitang and Lu Shunrong: *The Ming Tombs and the Great Wall, and the Proterozoic Strata in Nankou and Changping.* Guide to Excursion B, 29 October, pp. 13, HGGSC and China University of Geosciences, Beijing, 1990

◊ Wu Ruitang: *The Peking Man Museum and caves, Zhoukoudian, and the Summer Palace.* Guide to Excursion C, 30 October. pp.10, HGGSC and China University of Geosciences, Beijing, 1990

◊ Wang Hongzen and Wang Genyuan: The XVth International Symposium of INHIGEO. In: *INHIGEO Newsletter No. 23* (1991), pp. 9-11, Cambridge, MA, U.S.A.

◊ M. Guntau: XV.Internationales INHIGEO - Symposium. In: *Nachrichtenblatt zur Geschichte der Geowissenschaften*, Hg .E. E. Kohler und P.Schmidt, Nr.1 (1991) p. 19 and 29/30, Regensburg und Freiberg 1991

XVIth Symposium, 1991, September 9-15, Dresden, Germany

Topic: Museums and Collections in the History of Mineralogy, Geology and Paleontology (with excursions). Conveners: Martin Guntau, Gerhard Mathé, Peter Schmidt, Wolfgang Weber (Germany)

Publications

◊ P. Schmidt (Ed.): "Museums and Collections in the History of Mineralogy, Geology and Paleontology." *ABSTRACTS.* Dresden and Freiberg, 76 pp. 1991

◊ G. Mathé: *The City of Dresden and its Museums.* (Excursion Guide), Dresden and Freiberg 1991, 8 pp.

◊ W. Weber: *Historical Mining Sites in the Saxon Erzgebirge.* (Excursion Guide), Dresden and Freiberg 1991, 8 pp.

◊ W. Weber: *The old Saxon Mining Capital Freiberg/Sachen.* (Excursion Guide), Dresden and Freiberg l991, 16 pp.

◊ P. Schmidt: *On the Private Library of Abraham Gottlob Werner (1749-1817) and the Reserve Précieuse in the Library of Bergakademie Freiberg.* (Excursion Guide), Dresden and Freiberg 1991, 12 pp.

◊ Gy. Vitális and T. Kecskeméti (Eds.): *Museums and Collections in the History of Mineralogy, Geology and Paleontology in Hungary.* Annals of the History of Hungarian Geology, Special Issue 3 (on the occasion of the XVIth International Symposium of INHIGEO), Serial Ed. G. Csíky, Budapest 1991, 133 p., ISBN 963 671 150 X [English]

◊ T. Kecskeméti and G. Papp: *Földünk hazai kincsesházai. Tanulmányok a magyarországi földtudományi gyüjtemények történetéröl. Studia naturalis 4.* Budapest 1994, 432 p. [Hungarian]

◊ Kenzo Yagi: Report on the XVIth INHIGEO Symposium in Dresden. *Journal of Geological Society of Japan*, Vol. 97, No.12, 1011-1013, 1991 [Japanese]

◊ U. Marvin: The XVIIth International INHIGEO Symposium, Dresden, September 9-15, 1991. *INHIGEO Newsletter No. 24*, 1992, pp. 3-8, Cambridge, Massachusetts, USA

◊ M. Guntau: Internationales INHIGEO-Symposium 1991. In: *Nachrichtenblatt zur Geschichte der Geowissenschaften*, Hg. E. E. Kohler und P. Schmidt, Nr. 2 (1992), p. 8, Regensburg und Freiberg 1992 [German]

XVIIth Symposium, 1992, 29th International Geological Congress 24 August - 3 September, Kyoto, Japan

Two Topics:

The Development of Geology in Japan and the International Exchange of Ideas on Earth Sciences
IGC Symposium II-25-1(including poster session). Conveners: Martin Guntau (Germany), Mitsuo Hashimoto (Japan), Arata Sugimura (Japan)

The History of Meteorite Studies in Japan, and International Contributions to Advances in Meteoritics.
IGC Symposium II-25-3. Conveners: Ursula B. Marvin (U.S.A.), Masatake Honda (Japan), Kenzo Yagi (Japan)

Publications

◊ 29th International Geological Congress, Kyoto, Japan 24 August - 3 September 1992, *ABSTRACTS* , Volume 3 of 3, pp. 993-995, (II-25-1: The Development of Geology in Japan and the International Exchange of Ideas on Earth Sciences); pp. 997-999, (II-25-3, The History of Meteorite Studies in Japan, and International Contributions to Advances in Meteoritics).

◊ M. Guntau, Ursula B. Marvin: Commission on the History of Geological Siences (INHIGEO). *General Proceedings. 29th International Geological Congress*, p. 118, Kyoto, July 1993

◊ Kenzo Yagi, M. Hashimoto and Ursula Marvin: INHIGEO at the 29th International Geological Congress in Kyoto, Japan 1992. In: *INHIGEO Newsletter No 25* for 1992, pp. 2-10. Cambridge, MA, USA 1993

◊ M. Guntau: XVII. Internationales INHIGEO-Symposium in Kyoto. In: *Nachrichtenblatt zur Geschichte der Geowissenschaften*, eds. E. E. Kohler and P. Schmidt, No. 2 (1992), p.23, Regensburg und Freiberg 1992 [German]

XVIIIth Symposium, 1993, 19 - 25 July, Campinas, São Paulo and Ouro Preto, Brazil

Topic: Geological Sciences in Latin America: Scientific Relations and Exchanges (with excursions)
Conveners: Silvia F. de M. Figueirôa, and Maria Margaret Lopes (Brazil)

Publications

- *Geological Sciences in Latin America: Scientific Relations and Exchanges.* Papers presented at the XVIIIth Symposium of the International Commission on the History of Geological Sciences - INHIGEO (Campinas, Brazil) July 19-25, 1995. Organizers: Silvia F. de M. Figueirôa & M. Margaret Lopes, Campinas; UNICAMP/IG 1994, 1994. 400 pp, ISBN 85-85369-06-x [English, Spanish, Portuguese]

◊ XVIII International Symposium. Geological Sciences in Latin America: Scientific Relations and Exchanges. *Abstracts/Resúmenes/Resumos.* UNICAMP Campinas 1993, 54 p., [English, Portuguese, Spanish]

◊ *Boletin Sociedad Latinoamericana de Historia de la Ciencia y la Tecnologia, Bogotá* (Colombia) 1994, pp. 1-2 [Spanish]

◊ Ursula Marvin: INHIGEO Board Meeting, XVIIIth International INHIGEO Symposium, Campinas, Brazil In: *INHIGEO Newsletter No.26* for 1993, pp. 2-3, 10, Cambridge, Massachusetts, U.S.A. 1994

◊ Silvia Figueirôa and Margaret Lopes: *Country Report, Brazil.* In *INHIGEO Newsletter No.26* for 1993, p. 10, Cambridge, Massachusetts, U.S.A. 1994

◊ M. Guntau and P.Schmidt: Kurzbericht über das 18. INHIGEO-Symposium in Brasilien, Juli 1993. In: *Nachrichtenblatt zur Geschichte der Geowissenschaften*, eds. E. E. Kohler und P.Schmidt, No.3 (1993), pp.17-19, Regensburg und Freiberg 1993 [German]

XIXth Symposium, 1994, July 4 - 8, Sydney, Australia,

Topic: Useful and Curious Geological Enquiries Beyond the World. Pacific-Asia Historical Themes
(with excursions), Conveners: David F. Branagan, Greg McNally, Allan Day (Australia)

Publications

- *Useful and Curious Geological Enquiries Beyond the World. Pacific-Asia Historical Themes.* Ed. by D. F. Branagan and G. H. McNally. 19th INHIGEO Symposium: Sydney University 1994, XXIV + 359 pp. (Conference Publications) ISBN 0-646-19244-2

◊ *History of Geological Investigations in the Newcastle-Hunter Valley Region*, by David Branagan and Greg McNally. XIXth International INHIGEO Symposium Excursion Guide, 2-3 July 1994, [Sydney, Australia, 1994], 7+34 pp.

◊ *History of Geological Investigations in the Blue Mountains*, by David Branagan and Greg McNally. XIXth International INHIGEO Symposium Excursion Guide for 6 July 1994", [Sydney, Australia 1994], 31 pp.

◊ *History of Geological Investigations on the South Coast of New South Wales*, by David Branagan, Greg McNally and Larry Harrington. XIXth International INHIGEO Symposium Excursion Guide, 9-10 July 1994, [Sydney , Australia, 1994], 52 pp.

◊ David Branagan: The XIXth International INHIGEO Symposium, Sydney, Australia 1994. In: *INHIGEO Newsletter No.27* for 1994, p. 3-4-3, Cambridge, Massachusetts, U.S.A. [1995]

XXth Symposium, 1995, 19-25 September, Naples - Aeolian Islands - Catania, Italy

Topic: Volcanoes and History (with excursions). Organizing Committee: Giovanni Frazzetta, Nicoletta Morello, Antonio Nazzaro, Italy

Publications

- *Volcanoes and history.* Proceedings of the XXth Symposium INHIGEO. Naples - Aeolian Islands - Catania. September 19 - September 25, 1995. [In preparation]

◊ *Volcanoes and history. Final Programme* [Programme, programme of scientific sessions, List of participants], XXth Symposium INHIGEO. Naples - Aeolian Islands - Catania 40 pp. [Naples, 1995] [English]

◊ *Volcanoes and history. ABSTRACTS.* XXth Symposium INHIGEO. Naples - Aeolian Islands - Catania. 74 pp. [Naples, 1995] [English]

◊ *Volcanoes and history. Guidebook,* XXth Symposium INHIGEO. Naples - Aeolian Islands - Catania. Part I - Antonio Nazzaro: Vesuvius, Pompeii, Campi Flegrei, Field Excursions p. 7-26; Part II - Giovanni Frazzetta & Marco Neri: Aeolian Islands and Etna Field Excursions. p. 29-92, [Naples 1995] [English]

◊ *Volcanoes and history. Anthology,.* XXth Symposium INHIGEO. Naples - Aeolian Islands - Catania. (Nicoletta Morello & Ezio Vaccari), 176 pp. [Naples, 1995] [Latin, Italian]

◊ Ursula Marvin, The XXth International INHIGEO Symposium, Italy, 1995. In: *INHIGEO Newsletter No. 28* (for 1995), pp. 2-3, Cambridge, Massachusetts, U. S. A., 1996

◊ David Branagan, Business Meeting at the XXth International INHIGEO Symposium, Catania, Italy, 1995. In: *INHIGEO Newsletter No. 28* [for 1995], pp. 3-4, Cambridge, Massachusetts, U. S. A. 1996

Review of Topics Addressed by INHIGEO Symposia

The International Symposia of INHIGEO have concentrated mainly on the scientific development of geological disciplines. Of the twenty-five topics presented and discussed at the twenty INHIGEO symposia that have been held to date, two were directed at aspects of the history of stratigraphy, two at geological institutions such as surveys or museums, two at meteoritics and planetary sciences, and one meeting each focused on geological mapping, geological education, economic geology, mineralogy, and biographies of geoscientists. Since the 1980s five symposia have dealt with the international or interregional exchange of geological ideas, a topic that has attracted increasingly widespread interest in the past few years.

Disciplines that have not been addressed in depth at INHIGEO symposia include the history of paleontology, geochemistry, petrology, petroleum geology, engineering geology, hydrogeology, and environmental geology. Other interesting topics that have received too little attention are the history of geoscientific knowledge in the context of society, or in relation to politics, economics, or philosophy.

Since its founding, INHIGEO has played a key role in generating worldwide interest in the history of geology. Plans under discussion for future symposia clearly indicate that INHIGEO will continue to provide strong leadership in this field into the 21st century.

FUTURE INHIGEO SYMPOSIA

The XXIst International INHIGEO Symposium, Beijing, China, August, 1996

INHIGEO will sponsor Symposium 22: *History of Geosciences*, consisting of two sessions at the 30th International Geological Congress in Beijing, August 4th to 14th, 1996. Vice-President Wang Hongzhen plans to prepublish a volume of papers to be distributed at the meeting [See the CHINA Country Report].

The XXIInd International INHIGEO Symposium, to be held in conjunction with The Charles Lyell-James Hutton Bicentennial Conference, London and Edinburgh July-August, 1997

In recognition of the 200th anniversaries of the death of James Hutton in 1797 and the birth of Charles Lyell the same year, the Geological Society of London and the Royal Society of Edinburgh are holding conferences in London and Edinburgh with excursions to classical sites of importance in the history of geology. INHIGEO is cosponsoring these conferences. INHIGEO Past-President, Gordon Craig, and Vice-President, Hugh Torrens, will leas some of the field excursions, and eight INHIGEO members will present invited talks. Numerous INHIGEO members have expressed intentions of attending and we hope for many more. The INHIGEO business meeting will be held during the conferences. The London program is scheduled for 30th July to 3rd August, and that in Edinburgh from the 5th-9th of August. Six sessions of invited talks will be held in each city, interspersed with receptions, dinners and other social events. Excursions will visit Lyell's boyhood home at Bartley Lodge in the New Forest, the Weald, and Hampton Court, and post-conference field excursions will visit Hutton and Lyell Country in Scotland on Friday and Saturday, August 8th and 9th.

A folder giving full details of the programs, excursions, and fees is being mailed along with this *Newsletter*. The attached registration forms show that one may register for either or both of the conferences. Note that substantial discounts are offered to attendees who register before April 1st, 1997.

1998: A Sabbatical Year for INHIGEO Symposia?

As noted in the report of the 1995 INHIGEO Business meeting in Catania, there currently is general agreement that, in view of the many meetings held in the last few years, INHIGEO will hold no symposium in 1998. However, the new INHIGEO Board to be elected at the Beijing meeting in 1996 will be free to decide whether to sponsor or cosponsor an appropriate history of geology meeting that year.

THE INTERNATIONAL UNION OF THE HISTORY AND PHILOSOPHY OF SCIENCES

The IUHPS generously supported the INHIGEO Symposium in Italy, for which we extend our sincere thanks. We are especially grateful to be given this support at a time when the IUHPS is devoting most of its resources to planning for the History of Science Congress at Liège in 1997.

The XXth International Congress of History of Science, 20-26 July 1997, in Liège, Belgium.

An INHIGEO initiative, a two-part symposium entitled *Development and Cultural Influence of Geological Sciences in an Age of Technological and Industrial Expansion* will be held within the framework of the Congress of the History of Science. The two themes of the Symposium are: 1) *Geology and Mining in the Old and New Worlds*, and 2) *Use of Non-Written Sources for the History of Geological Sciences.* In accord with Congress guidelines, the symposium organizers plan to include contributed as well as invited presentations. Decisions on proposals for contributed papers will be made by Program Committee referees on the basis of submitted abstracts. Prospective authors of contributed papers under either of the two themes are invited to contact one of the symposium organizers, INHIGEO members:

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Anyone planning to take part in the Congress should also request information from the Congress Office: XXth International Congress of History of Science, Centre d'Histoire des Sciences et des Techniques, 15 Avenue des Tilleuls, B-4000 Liège, Belgium (Tel: (32) 41-669-479; Fax: (32) 41-66-9547; E-mail: chstulg@vm1.ulg.ac.be.

The schedule of sessions has not yet been announced, but Ken Taylor estimates that the sessions listed above are likely to occur on the last two or three days of the Congress. That would leave only four days between the closing of the Congress at Liège and the opening of the Lyell-Hutton Bicentennial Conference on July 30th in London.

A History of the International Union of Geological Sciences (IUGS)

The Geologists at Prague: August 1968, by Cecil J. Schneer appeared in *Earth Sciences History*, vol. 14, no. 2, p. 172-201, 1995. As Part II of Cecil Schneer's history of the IUGS, this article describes from personal observation and interviews with numerous witnesses, the invasion of Prague by Warsaw Pact troops and tanks at the beginning of the XXIIIrd International Geological Congress. His abstract summarizes the event:

In August, 1968, nearly 3000 geologists from 91 countries gathered in Prague for the XXIIIrd International Geological Congress. Geology was in a state of major transformation and the Congress was the opportunity for the nascent International Union of Geological Sciences to involve the world geological community. But a brutal invasion of Czechoslovakia by its Communist allies frustrated all plans. Over 500 papers, more than 50 field trips, dozens of colloquia, meetings of affiliated societies etc. were canceled. Thousands of geologists who might have disseminated a uniquely global science to the classrooms and boardrooms of 91 countries, were scattered by the winds of war. In rump sessions within the dying Congress and immediately after, a handful of West bloc geologists, committed agents of the new developments, struggled to pick up the pieces. The IUGS had to wait four years for another plenary session with the world geological community.

The Congress as planned was unique in several ways. In response to new interests it was the first to include a section on engineering geology and the first to schedule sessions on the history of geology, the use of mathematics in geology, and extraterrestrial geology--including the geology and stratigraphy of the Moon and planets. It was the first IGC to meet after the IUGS had been organized, four years earlier, for the purpose of encouraging and guiding international geological programs between Congresses. Participants were anxious to hear the initial progress report of the IUGS. In addition, the Congress was gathering at a particularly exciting time when geology itself was undergoing fundamental changes. The theory of plate tectonics, published that year, offered a unified conceptual framework for interpreting the Earth's crustal motions. Men were scheduled to walk on the Moon the following summer. New techniques of remote sensing and electronic data processing were producing floods of previously unavailable information on the Earth's interior, the atmosphere, and the oceans. Schneer points out that the new types of evidence and the ideas they generated were so recent, and came from so many directions, that no one geologist could be in possession of more than fragments of the picture. Suddenly, the geology of the most remote or least developed corner of the planet might be as significant as that of the exquisitely mapped Alps of Switzerland. So geologists from Egypt, and Hanoi, and North Korea and numerous small countries had been able to persuade their governments to send them to Prague, as had large contingents from the USA, UK, USSR, France, and Germany. For the first time in three decades, the ancient mining towns of the Bohemian Massif and the Western Carpathian Mountains were to be open to geologists from around the world.

Schneer describes the excitement on Friday, August 16th, the day before the Congress opened, when buses loaded with pre-congress field trippers disgorged their passengers to mix with hundreds of new arrivals in Prague. Schneer (p. 178):

People approached the delegates on the streets to hone their language skills, engaging the visitors in animated conversation, proud of their new found independence...They had just emerged from three decades of silence...For delegates returning from field trips in the East Bloc, it was this outpouring of talk, this irrepressible flood of words, that more than anything else characterized the Prague Spring.

Throughout his discussions of the geological and political history of the IGC and the IUGS, Schneer brings alive the chief participants. These include Josef Svoboda, President of the Congress and Director of the National Geological Survey of Czechoslovakia, who spoke with just pride of the detailed mapping of his small country with its complex geology and important mineral resources that had been initiated after World War II and completed with state-of-the-art analyses in time for the Congress and its field trips. R. F. Leggett of Canada addressed the assembly on "Man as a geological agent," years before environmental topics were generally recognized as significant scientific problems. A. P. Vinogadov, head of the Soviet delegation, reviewed the development of the earth sciences from the critical discovery of radioactivity by the Curies, through Eduard Suess' concept of the shell structure of the Earth, to the new disciplines of the contemporary science and his vision of the future. Scnheer remarks that as the foremost figure of the largest national geological community on Earth, Vinogradov probably ranked as the world's leading geologist for a majority of those in the Great Hall.

On August 20th, the first day of sessions, Vladimir V. Beloussov of the USSR presented a paper in which he systematically argued against the new theory of continental drift. There was no powerful rebuttal. All papers at the Congress had to be submitted more than a year in advance and so they dated back to a time when sea floor-spreading was just gaining acceptance and the full blown model of plate-tectonics had not yet been proposed. No figure of Beloussov's eminence could challenge his claims. But the new ideas were abroad, and were the subject of animated discussions on the field trips and in the congress halls. During that week they might well have had successful hearings, but that night the invasion took place.

Planes buzzed Prague, tanks rolled through the streets, and the first of 600,000 soldiers entered the country. Schneer describes the slow coming apart of the Congress and the flight of the *congressistes*. Nothing much was left of the IGC by Friday, August 23rd. Everyone was sad for their Czech colleagues. While some students and younger delegates wore black armbands and refused to speak to the Russian geologists, many senior delegates who knew them openly shed tears for their Russian colleagues. One poignant scene Schneer describes is of the blind Russian war hero, Vladimir V. Tikhomirov, President of the International Committee on the History of Geology that had been formed a year earlier at Yerevan, Armenia. He was standing against a wall outside a lecture room with Mme. Tikhomirova by his side, in a state of utter incomprehension. The first formal meeting of his Committee--the immediate forerunner of INHIGEO--was scheduled for the next day, Saturday. Madame Tikhomirova had brought with her on the plane vodka, caviar, and small fruits, obtained with much difficulty in Moscow, for a reception at their hotel. Now they stood there, their world turned inside out, ignored by passers by.

The IGC at Prague surely was one of the most dramatic events in the annals of geological institutions. In this 29-page article, Schneer recounts the details with a flair for depicting the compelling personality, the telling incident, the significant turning point. He also provides a wealth of detailed information on the structure and management of the IUGS with its numerous commissions and committees and on the geological programs it has coordinated. In this section of his history of the IUGS, Schneer has shed much light not only on one geological institution but also on the recent history of geology itself.

Ursula Marvin

THE HISTORY OF EARTH SCIENCES SOCIETY

Two numbers of *Earth Sciences History*, Volume 14, were issued in 1995. Four of the six articles in No. 1 focus on the visual aspect of geology. As Mott Greene explains in his lead editorial, two articles relating to Charles Darwin's use of pictorial materials were submitted to *ESH* independently but simultaneously. One, by David

Stoddart, uses an abundance of illustrations to build a case that Darwin suffered severe limitations as a maker of diagrams and maps--normally an indispensable skill for a field geologist. The other, by Sandra Hebert, presents a never-before-published geological manuscript by Darwin that demonstrates his dependence on the cartography of others. This article includes the first colored illustration ever published in *ESH*. It is Alexander Caldcleugh's "*Map of the Country between Buenos Ayres and the Pacific Ocean, with a specification of the different geological formations*," published in London in 1825. In the third article on visual aspects, Léo Laporte illustrates George Gaylord Simpson's skills in using diagrams to represent thoughts as well as things, and in the fourth, Peter Lessing, presents successive working and published versions of the Rogers-Hotchkiss maps of Virginia and West Virginia that appeared in the 1870s and 1880s.

In an article based on printed sources, correspondence and archival materials, Carl-Henry Geschwind, extends his investigations of the foundations of petrology in North America with an explanation of why it took so long for economic geologists and petrologists and petrographers "in the field" to incorporate in their thinking the results of experimental petrology. In discussing the early debates on Wegener's theory of continental drift, Robert Newman builds a case that Bailey Willis, Charles Schuchert and others orchestrated an attack, fueled by strong rhetoric and bolstered by their professional authority and influence, that aimed at destroying a theory that could not be disconfirmed on empirical grounds or dismissed on logical grounds.

The portrait of David Brunton (1849-1927) on the cover relates to a short note by Peter H. von Bitter: *The Brunton Pocket Transit, A One Hundred Year Old North American Invention*. Brunton patented his Pocket Mine Transit in 1894, and its century of indispensable service to geology fully deserves recognition.

Volume 14 No. 2 consists of three articles and a memorial note relating to the history of geology in the USSR and eastern Europe. The cover article is an account of the life and death of Georgiy Frederiks (1889-1938), the Russian paleontologist, stratigrapher, and tectonics expert, along with a cross section he drew of the Urals. After a brilliant career as one of Russia's leading geoscientists, he disappeared in the midst of the Stalinist terror and became a 'non-person' in the geological literature. On the basis of extensive interviews and studies of archival materials, the authors, John Talent, Niel Archbold, and Victor Machlin have determined that Frederiks was shot on February 18, 1938, having been charged with intentionally making an incorrect interpretation of geological sections of an oil field and conspiring to kill leaders of the USSR, including Comrade Stalin himself. Millions, at that time, were accused of conspiracy against Stalin, but the charge of misinterpreting geological structures suggests to the authors something more sinister, such as malicious, intellectually jealous accusers with geological expertise. As disturbing as the story of Frederiks' fate, is that of the profession in that era when geologists learned to avoid every trace of initiative and settled into decades of stultifying conformity.

An article by Cecil J. Schneer on the break-up of the 23rd International Geological Congress by the invasion of Prague in August, 1968, by Warsaw Pact troops, is reviewed above in the section on the history of the IUGS.

A third article, *Studies of the History of Geology in the Soviet Union in the Second Half of the 20th Century*, by Vladimir V. Tikhomirov was published posthumously. Tikhomirov founded the Committee on the History of Geology that evolved into INHIGEO. The same issue contains a copy, for a wider readership, of the memorial note recounting the remarkable career of this geoscientist who was blinded during service in World War II, written by his colleague, Yu. Ya. Soloviev, that appeared in *INHIGEO Newsletter No. 26* , for 1993, pages 40-41.

As usual, both issues of *ESH* include news items, book reviews, and lists compiled by Gerald Friedman of publications of interest to historians of geology.

Ursula Marvin

Listserv for the History of Earth Sciences.

The Historical-Geology listserv is a free E-mail discussion group administered by the University of Wyoming through its International Archive of Economic Geology. The listserv is intended to provide a forum for discusion on subjects related to the history of geology and the extractive minerals industries. The listserv is the official E-mail channel of the Mining History Association and of GeoClio, and is freely available to all interested parties. Historians

and earth scientists are encouraged to use this listserv to exchange ideas with other scholars, search for research materials, and discuss topics of interest to the field. The listserv is moderated by Brad Burton, Manager of the International Archive of Economic Geology at the University of Wyoming. To subscribe, send the one-line message: **subscribe historical-geology** to **mailserv@uwyo.edu**.

It also would be greatly appreciated if all who are interested in the history of Earth Sciences were to consider joining HESS, and those who already are members were to encourage friends and colleagues to do so.

Ron Rainger, Secretary, HESS

INHIGEO NOTICES AND A QUERY

Hutton-Lyell Bicentennary Celebrations in America, 1998

The year 1997 will mark one of the more bizarre coincidences in the history of geology: the 200th anniversary of the death of James Hutton and the birth of Charles Lyell in the same year. This singular occasion offers the opportunity to reflect upon the profound contributions made to our science by both individuals and to review the history of the earth sciences on a broader front. It also could offer a timely catalyst for contemplating the future of our discipline at a critical time of great change--a look into the 21st Century.

In Britain, a double-header symposium will celebrate the Bicentennary in the summer of 1997. Here in North America, the Geological Society of America's History of Geology Division will sponsor its annual symposium on a Lyell-Hutton theme at the 1998 annual meeting in Toronto. This event is being organized by Gerard V. Middleton, of McMaster University in Hamilton, Ontario, and Keith Tinkler, of Brock University in St. Catherines Ontario. The Toronto venue will offer the opportunity for a field trip to Niagara Falls and the elevated beach terraces of Lake Ontario, which were of great interest to Lyell during the first of his four visits to North America in 1841-1842. The impact of Hutton's and Lyell's ideas upon early American geology will be addressed in the symposium. Because Hutton never visited North America, the emphasis inevitably will favor Lyell, who came four times.

For more background on Lyell's visits, see his two published travel journals (1845 and 1849) and *Charles Lyell on North American Geology*, a reprint collection of journal articles as well as eight lectures presented by Lyell in New York City in 1842, H. Skinner, editor, 1977, Arno Press.

R. H. Dott, Jr., William Jordan, William Brice
The Bicentenary Committee

The Archive for the History of Geology in Freiburg (Geologenarchiv)

This archive, which has close links with the *Geologische Vereinigung* (*G.V.*), is a treasure vault for those interested in the history of geology. After the first "Geologenarchiv" had been destroyed in Berlin during the war, the present one was established in 1958 under the guidance of the *G.V.* Max Pfannenstiel of Freiburg, who was not only a geologist but also an experienced librarian, was asked to establish this new archive. The *G.V.* gave moral support as well as some small financial assistance for purposes such as the acquisition of rare documents.

When Pfannenstiel handed the collections over to the university library for storage and future cataloguing in 1972, they already consisted of more than 30,000 documents, among them complete sets of scientific correspondence mainly of geologists, paleontologists and, to a lesser extent, also of mineralogists. After Pfannenstiel's death in 1976, his work was continued by colleagues who were proposed by the *G.V.* Today, the archive owns about 70,000 documents. In addition to the letters, there are movies, tapes, maps, sketches,

fieldbooks, portraits, medals, obituaries, and other materials of historical interest. The photo collection holds about 700 pictures.

The bulk of this material is catalogued and thus easily accessible. The development of the archive depends almost entirely on gifts from interested and generous colleagues. Examples from the last two decades include the bequests of André Cailleux, Eugène Wegmann, Hans Stille, Hans Cloos, and major gifts from Curt Teichert and Georg Knetsch. *Archive News*, which includes a list of recent benefactors, is published annually in the *Geologische Rundschau*.

For information, contact: Geologenarchiv (Prof. Dr. Eugen / Dr. Ilse Seibold), Universitätsbibliothek, Werthmannplatz 2, D-79098 Freiburg I. Br.; Fax: (49) 0761-203-3987.

International Newsletter: *The Cultural Heritage of Libraries concerned with Geosciences, Mining and Metallurgy.*

1995, Volume 1 for 1994, edited by Peter Schmidt, Freiberg (Sachsen), ISBN 3-86012-011-5.

The idea for this new international newsletter was born during preparation of the First Symposium on the Cultural Heritage of Libraries concerned with Geosciences, Mining and Metallurgy held in Freiberg, Saxony, in September 1993. The Symposium brought together 140 people interested in the preservation, indexing, and usage of library collections in the specified fields. This 84-page Newsletter, including four pages of colored prints illustrating events at the Symposium, includes an abundance of information on all aspects of its subject matter. There are bibliographies of works in particular libraries, annotated lists of reprints and facsimiles, and abstracts of papers on collections of the works of major figures such as Georgius Agricola, Abraham Gottlob Werner, and Alexander von Humboldt. There also are discussions of methods used in maintaining and improving collections and access to them. In one article, Peter Schmidt outlines a proposal for electronic cataloging of pre-1851 prints in European libraries of Geosciences, Mining and Metallurgy. About two-thirds of the items are in German, one-third in English, and one article is in Russian. The volume is directed at all those who are concerned with the cultural heritage in libraries of geosciences, mining and metallurgy. This includes not only librarians, archivists, and scholars, but also publishers, booksellers, antiquarians or secondhand booksellers, restorers, and similar occupational groups closely connected with books and libraries. Current plans are to issue one volume each year. Volumes 1 and 2 will be compiled, edited and published in Freiberg in Saxony, Volumes 3 and 4, at Leoben, Austria, where the Second Symposium on Cultural Heritage was held in 1995, and Volumes 5 and 6 (1998 and 1999) will be issued by the libraries that host the Third Symposium.

Peter Schmidt , Lieselotte Jontes, Tillfried Cernajsek

Project "pro Chemnitz": Continuation of Bibliography of Works on Georgius Agricola

The Phoenix gGmbH Chemnitz has begun a continuation of the bibliography of works dealing with the German humanist and universal scholar, Georgius Agricola (1494-1555) that was edited by Dr. Hans Prescher with the collaboration of Drs. I. Franz, Rudolf Michaelis, and Ulrich Horst and published in 1971. That edition brought the record up to 1963. The Project Group will greatly appreciate receiving any bibliographical data of the following types that have appeared from 1963 to the present.:

1. Announcements of new editions or first editions dealing with the works of G. Agricola; with the price(s).
2. Literature about Agricola, listing the author, title, publication, date, size, use of artwork, and price.
3. Items for a bibliography or compilation of letters to or from G. Agricola.

Mailing address: Phoenix gGmbH Chemnitz, Projekt "pro Chemnitz", Brückenstrasse 4, 09111 Chemnitz. Tel/Fax: (49) 0371-652210.

Hoffmann
Project Director

Global Change and History of Geophysics: Evaluations and Implications

W. Schröder, ed. (1995), Proceedings of the International Conference during the IUGG/IAGA General Assembly, July 1995, Boulder, Colorado, 240 pp. ISSN 0179-5658, 30 DM ($25 US).

The contents include papers on climate change, environmental problems and geophysical studies, a proposed astrochronology of the last 15,000 years, a history of geomagnetic studies and applications, the eruption of Krakatoa and atmospheric-optical phenomena after 1883, the prime mover of volcanoes, the history of the conceptof of archaeoastronomy, and numerous other geophysical topics some with a strong historical component. Orders may be placed with: W. Schröder, Hechelstrasse 8, D-28777 Bremen-Rönnebeck, Germany.

History of European Geosciences, March 23-27, 1997, Strasborg, France

A symposium on the above topic will be held at the biennial meeting of the Eruropean Union of Geosciences at Strasborg, France (EUG-9) 23-27 March, 1997. For the purposes of the symposium, the scope of history will be broadly construed. Traditionally, it has been customary to weigh geological concepts, one against the other, such as the controversy: "Catastrophism vs Actualism." However, a fruitful line of enquiry is that concerning the backgrounds of the persons involved, for it is here that vital clues to the formulation of concepts can often be uncovered.

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The Query of 1995

Siegmund Reckendorf (dates unknown), German mining engineer and mineral surveyor. In 1848 the Government of India received an application from Reckendorf for the post of Geological Surveyor. In his application Reckendorf claimed to have studied geology at Heidelberg, after which he worked for various mining companies in Austria, Poland, Italy and Turkey. Following a period as the 'head of the mining department of Serbia' he went to India at the invitation of the Maharajah of the Punjab. He returned to Europe in 1845 to work as the Superintendent of the Marquis of Breadalbane's mines in Scotland, but soon returned to India where he became a partner in a coal mine. The failure of this enterprise led him to apply for the post of Geological Surveyor. If anyone can verify any of these facts or provide any other information about Reckendorf's eventful life, particularly anything concerning his employment in central Europe, please contact me at 30 Lutton Place, Edinburgh, EH8 9PG, United Kingdom.

Andrew Grout

COUNTRY REPORTS

Authors or coauthors are listed at the end of each country report or section thereof. Reports with no authors listed were compiled from news items, letters, or reprints sent to the Secretary-General. All reports have been edited in the interests of brevity, clarity, and a common format. We always hope for news from each country and regret the lack of communication from some of them. We invite each individual INHIGEO member to report his or her activities in the history of geology for *Newsletter No. 29* for 1996.

ARMENIA 1995

Through letters carried to America by friends and relatives, Professor Edward B. Malkhassian, a founding member of INHIGEO, reports that he has been working on a book titled *The History of Geology in Armenia in the Middle Ages*. He planned to finish it in the summer of 1995. A scarcity of paper and of resources in general make scientific work and publication difficult at this time. However, the Armenian Academy of Sciences had just received the pleasant news that Armenians in America were planning to publish a series of books about the development of science in Armenia from ancient times to the present. He and his colleagues will prepare the volume about the history of geology.

AUSTRALIA 1995

Two INHIGEO members from Australia, David Branagan and David Oldroyd, attended the INHIGEO Symposium in Italy and presented papers there. President Branagan spoke on the "History of Volcanic Activity in the Australasian Region." He pointed out that volcanic activity is incorporated into legends of the Australian Aborigines, who may have witnessed it in Victoria about 4,000 years ago. He then focused on the story from the earliest European observations, beginning with William Dampier's record of seeing a *nuée ardent* north of Papua-New Guinea in 1700, up to the middle of the 19th century. He specifically examined the influence of William Hamilton's studies of Vesuvius on the first scientific investigations of the South Pacific region and the reverse influences of Pacific discoveries on the ideas of Charles Lyell, G. Poulett Scrope and others in Europe.

Oldroyd spoke on "Archibald Geikie's Ideas on Volcanoes." Inasmuch as Geike, as Director General of the Geological Survey of Britain, was (socially at least) the most influential British geologist of the last twenty years of the 19th century, it comes as a surprise to learn that some of Geike's "long lost" field notebooks were discovered only recently. Oldroyd, who is analyzing these notebooks along with Geike's published works, presented a picture of Geike's ideas about volcanic action and the internal structure of the Earth.

Thomas Darragh reports that he is translating letters written by Ludwig Becker to the paleontologist J. J. Kaup and is working on an account of the production of Frederick McCoy's *Prodomus of the Palaeontology of Victoria*.

David Corbett reports that he has spent the last two years quarrying the papers of Sir Douglas Mawson, the Antarctic explorer who was Professor of Geology and Mineralogy at the University of Adelaide from 1921 to 1952. Corbett finds that Mawson's geological work has been a rather neglected part of his life. However, interest currently is intensifying, with the South Australia Museum and University of Adelaide combining in an effort to establish a permanent 'Mawson Exhibition' and to ensure the future of his large collection of artifacts and papers. Corbett is completing a general paper on Mawson's geological career and soon will begin research on his longtime and influential connection with the S. A. Museum, where he was Honorary Curator of Minerals and served for a time as Chairman of the Museum Board.

Note: Mawson is of special interest to meteoriticists because a member of his expedition found the first Antarctic meteorite in the snows of Adelie Land in 1912. Also, it was Mawson, as Honorary Curator of the S. A. Museum, who recommended in 1931 that reports should be investigated of iron meteorites among crater-like depressions at Henbury Cattle Station in Northern Territory. This led to identification of one of the earliest known groups of meteorite impact craters. UBM]

AUSTRIA 1995

The second meeting on Cultural Heritage in Libraries of Geosciences, Mining and Metallurgy was held in Leoben in September, 1995. To date, we have received no detailed description of the program or publications.

Professor Alexander Tollmann of the Geologiches Institut der Universität Wien, an INHIGEO member since 1982, has sent us a notice of the death of Edith Kristan-Tollmann, his wife and long-term partner in research and writing on geology and the history of geology. Born on April 14, 1934, Edith attended the University of Vienna where she studied with eminent teachers such as L. Kober, O. Hühn, F. Machatschki, H. Leitmeier, and H. Wieseneder. In 1959 she earned her PhD degree in geology and paleontology and married her fellow-student Dr. Alexander Tollmann. While she still was a student, Edith published several articles on foraminifera in the Höhen Wand district of lower Austria. After earning her doctorate she continued, with only two exceptions, to publish articles on paleontology, often focusing on the foraminifera of the Triassic Tethys, every year until she died. Her highly distinguished bibliography on paleontological subjects totals 103 papers, 70% of which she published alone, about 20% with her husband, and 10% with others. Meanwhile, she was diligently running her home and when her son, Raoul Tollmann, was born in 1967, she happily assumed the new role of motherhood. Her publication record lapsed the following year, 1968, after which she resumed her pace of research and writing. In 1982 she was appointed as a Lecturer in Micropaleontology at the University of Vienna.

From her youth, Edith had maintained a strong interest in world religions and what lay behind the ideas of the Deluge, the culture of sacrifice, and the "riddle of the universe." In comparing myths, legends, symbols, and pictographs of peoples around the world, she believed she had found many counterparts to the story of the Biblical Deluge, and that these almost invariably included tales of great balls of fire coursing down the sky. To explain this, Edith and Alexander formulated a hypothesis that a great comet had split into seven fragments that plunged into the oceans, setting up giant tsunamis that washed simultaneously over many lands. They added that fragments of these comets bombarded the lands and excavated craters, including the Köfels crater in Austria. They saw this event as the great original trauma suffered by mankind; the one that gave rise to organized religion and the concept of sacrificing for protection against the demons. In 1992, the Tollmanns published their first articles on this subject, "*Der Sintflut-Impakt*" and "*The Flood came at 3 o'clock in the morning.*" In 1993, Alexander and Edith Tollmann published a 560-page book: *Und die Sintflut gab es doch. Vom Mythos zur historischen Warheit*, which became an instant best-seller in Austria and Germany and subsequently was translated into Dutch. Public interest was tremendous. However, specialists in comet impacts have not accepted this idea, in part because it does not lend itself to scientific testing. After 18 years of battling illness, Edith died on August 25th, 1995.

The INHIGEO Board sends its sincerest sympathy to Professor Tollmann and to members of their family and their colleagues.

Ursula Marvin

BOLIVIA 1994-1995

In June, 1994, the second European Conference on Resources took place in the mining city of Freiberg, Germany, the seat of the first mining school in the world. At the invitation of Professor Otfreid Wagenbreth, Dr. Carlos Serrano presented a paper: "Der Bergbau Latinamerika im Jahrhundert un die Entwicklung der Montanwissenschaften." In July, 1994, the 4th International Congress of Americanists was held in the Swedish cities of Stockholm and Uppsala. Among the different conferences taking place under the direction of Prof. Manuel Castilo, Dr. Serrano participated in the Scientific-Cultural Exchange Group and presented a paper titled "Technological interchange in amalgamation procedures between mining centers of America and their counterparts in Europe." The paper was published in 1995 in the *Boletin de la Sociedad Geográfica y de Historia "Potosí."*

In 1994, Serrano's paper: "Technological transfer and interchange relations--a case study: amalgamation in the mining schools in the Colony," which he had presented the previous year at the XVIIIth International INHIGEO Symposium in Brazil, was published in the symposium proceedings.

A celebration of the 500th anniversary of the birth of Georgius Agricola (1494-1555) was organized in 1994 in Oruro, Bolivia, by the National Faculty of Engineering of the Technical University of Oruro. Serrano presented a paper "On the beginnings of the technique of mineral preparation," published by the Imprenta Universitaria, Oruro in 1995.

The most important event of 1995 was the celebration of the 450th anniversary (1545-1995) of the opening of the famous silver mines of the "Cerro Rico de Potosí." The Cerro Rico silver production was the mainstay of the economic power of the Spanish empire for several centuries. Potosí is of historical interest to all South Americans because the Liberator, Simon Bolivar (1783-1830), declared to his revolutionary band on the plains of Colombia: "We shall carry our triumphant arms to the top of Potosí!" Bolivar fulfilled this promise by climbing to the top of the Cerro Rico (4,792 m) and planting his standard there on 26 October, 1825. (cf: Subieta, 1995, p. 174).

Meetings were held for a week in April, 1995, in the "Imperial Town of Charles V," as Potosí was known in colonial times, with guest speakers from Germany, Spain, England, the USA, France, Mexico, Argentina, Chile, and Bolivia. Serrano spoke on: "High technology in the mining company of Potosí--Ing. Luis Soux, its promoter." In addition to the scientific program participants visited the museums of the Convento de Santa Teresa, the Casa Nacional de la Moneda, and the Cerro Rico itself.

During the meeting several newly published books were displayed, notably an anthology "*El Cerro Rico de Potosí 1545-1945, 450 años de explotación.*" This 296-page book contains 18 chapters in Spanish that are summaries and translations into modern Spanish of historical works and travelers' reports taken from archives in the Biblioteca Nacional de Madrid relating to Potosí from the later 1540s onward. The book opens with the incident of 1545 when an Indian told a Spaniard there was silver in the mountain. The Spaniard investigated, staked a claim, and spread the news. The growth of the city, its peoples and their customs, the geology and mineralogy of the region, and especially of the mines, and the methods, including a system of forced labor, employed in extracting the riches of the Cerro, all are recounted from old sources. One chapter by Daniel Howard and Carlos Serrano, "La geologia, la mineralogia y el sistema de vetas del Cerro Rico," discusses the vein system in the Cerro. The book is an exceptionally rich source of historical materials on what, arguably, proved to be the richest mineral deposit in the world.

Volume 16 of the *Boletin de la Sociedad Geográfica y de Historia "Potosí"* (1995), edited by Carlos Serrano, contains 14 articles relating to the history of the *Sociedad Geográfica* itself, founded in 1912, and its concern with documenting the history of Potosí and of Bolivia.

A large book, *Potosí: Fotografias de Daniel Gluckman: Potosí,* consisting mainly of remarkably beautiful colored photographs was issued to commemorate the 450th anniversary of the Cerro Rico as part of the "Colección Ciudades Iberoamericanas" series published by Ediciones de Cultura Hispanica. Introductory texts in Spanish provide much of historical interest under the headings: "Art, Architecture, and Urbanization in Potosí," "Potosí, the Imperial City," and an "Introduction to the City." The end-papers provide an oblique bird's-eye view of the city lying at the foot of the Cerro as it appeared to the artist who painted it in golden and coppery tones in 1768. In the nearby countryside are seen the spectacular systems of dams and canals that supplied the mills with water. On the conical peak of the Cerro, itself, stands a large cross, where today, as shown by an aerial photograph of the same scene, there is mounted a TV antenna. This book, published in 1990, with pictures of miners working underground as well as of the city and the life of its people, is an exceptionally fine volume to mark the anniversary celebrations.

An historical exhibit was featured by the Ore Dressing Laboratory of the University under the direction of Carlos Serrano. It was dedicated to two engineers, one French and one Bolivian, who contributed to the success of recent mining operations at the Cerro Rico. The French engineer, Luis Soux, worked at the Cerro Rico for the first fifty years of this century; the Bolivian, Julio Peláez, sponsored many innovations during the years 1980-1991. The exhibition showed the story of the "Cerro Rico," "Las Lagunas," (the system of lakes and canals that supplied water to the mills, the "Processing Plants," and the "Problem of Contamination of the Rio de la Ribera," at the base of the mountain, first by mercury and later by reagents from the mill processing of the ores.

The Faculty of Mineral Engineering at the Universidad Autonomia "Tomás Frias" has organized an historical section on Potosí and the Cerro Rico. This includes a collection of maps of the Cerro, the designs of the mills on

the Rio Ribera, and other studies by faculty members. Acknowledgment is made of the donation of numerous documents and plans pertaining to the history of Potosí by the family of Luis Soux, and by the American geologist, Thomas Marvin, who contributed maps and reports of the geology of the mines and the surface geology in the vicinity of the Cerro Rico.

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Carlos Serrano\UBM

BRAZIL 1995

Silvia F. de M. Figueirôa and M. Margaret Lopes submitted an abstract to the INHIGEO Symposium in Italy, but, unfortunately, when the time came neither was able to attend. In their abstract, *Understanding Volcanism in Brazil: a Preliminary Survey on Brazilian Geoscientists' Ideas,* they refer to the folk wisdom that Brazil is a "blessed country" because it has no hurricanes, no intense earthquakes, nor active volcanoes. As a result, naturalists had little motivation to study these phenomena. Beginning in the 18th century, a few Brazilians showed some interest in these topics but did not study them very intensively. In the 1840s the Brazilian Historical and Geographical Institute proposed to its members a "research program" entitled: "Which are the traditions, or geological vestiges, that can give us certitude about the occurrence of earthquakes in Brazil?" Not until 1895, however, did Guilherme de Capanema, who had graduated from the Bergakademie in Freiberg, publish the first paper by a Brazilian on earthquakes. He believed there was a systematic link between earthquakes and volcanoes. The following year a newly-established natural history society in Brazil issued a paper asking if the frequent mists in Rio de Janeiro could be of volcanic origin. In 1919, a functionary of the Brazilian Geological and Mineralogical Survey addressed the question that had been posed in the 1840s in a paper titled: *Possibility of the existence of volcanoes and earthquakes in Brazil.* Since then Brazilian geologists have become fully knowledgeable about the origins of volcanoes and earthquakes, but their prolonged lack of interest in earlier times reflects the absence of these phenomena in their large country.

CANADA 1995

This year INHIGEO member William A. S. Sarjeant completed his 3-volume *Supplement II (1985-1993)* of his *Geologists and the History of Geology: An International Bibliography from the Origins to 1978* and sent it to the publishers for issue in 1996. This second *Supplement,* 2,386 pages long, includes 1,747 bibliographies of

geologists and it indexes 7,704 publications. Sarjeant's *International Bibliography* as a whole is the ultimate reference source for historians of the geosciences. Sarjeant has diligently searched out every major and minor work relating to this subject in all languages written in the Latin alphabet. The original 5-volume *International Bibliography*, 6,217 pages long and representing 20 years of labor, was published in 1981. The first *Supplement,* in two volumes appeared in 1987. So far, the entire monumental work fills 10 volumes that index about 44,500 books and papers and include about 10,000 brief biographies of geologists. Sarjeant conjectures that these ten volumes plus new original material may be available in both CD-ROM and hard copy six or seven years from now. We can only conclude that historians of geology are exceptionally fortunate to have such a work available to us.

In August, 1995, Sarjeant took part in a conference held at Keble College in Oxford, England, to celebrate the centenary of the birth of Professor J.R.R.Tolkien. Under his full name, William Anthony Swithin Sarjeant, he presented *The Geology of Middle-earth*, a paper in which he attempted to produce a tectonic reconstruction of the region based on earlier findings by R. C. Reynolds in 1974. Reynolds already had applied the concepts of plate tectonics and delineated four plates in Middle-earth bounded by transform faults. Sarjeant recognizes not four but six plates, two triple junctions, a major rift valley, two transform faults and sixteen normal faults, and he traces a detailed history of plate motions, volcanism generated by two hot spots, and glaciation in the highlands. He compares many of the geographic features of Middle-earth with those found on Earth today. Readers unfamiliar with the works of J. R. R. Tolkien and his ability to conjure up people and places of great verisimilitude and sustain their histories through several volumes should be warned that Middle-earth is a marvelous figment of Tolkien's imagination. When Sarjeant, who possesses the same talents himself, fills volumes with fabulous geographies and histories, he writes under his middle names, Anthony Swithin.

Sarjeant reviewed four books for *Earth Sciences History.* He regards *Seismosaurus, the Earth Shaker* by David D. Gillette (Columbia University Press, NY, 1993, 205 pp. $39.95) as a work destined to be of great historical importance in the field of paleontology. He points out that no comparable work reports the complete history of a single excavation from first discovery to eventual completion. Furthermore, *Seismosaurus* proved to be the largest land animal yet known. Sarjeant finds that it is rare for any author to set forth, so lucidly and reasonably, the development of his ideas concerning the environment, the cause of death, and the circumstances of fossilization of the creature he is studying. The book is lavishly illustrated with photographs and diagrams and Sarjeant concludes that, altogether, it is a well-produced, attractive and important work well worth its purchase price.

In his review of *Darwin in Italy, Science across Cultural Frontiers* by Guilano Pancaldi, 1991 (Translated by R. B. Morelli. Indiana University Press, Bloomington and Indianapolis, 222 pp. Hardcover, $35.00) Sarjeant notes that the first clear formulations of most major geological concepts took place in the states of the Italian peninsula in the 15th to 17th centuries. Many passed unnoticed or were scoffed at in other countries. Leonardo, whom Sarjeant calls "..perhaps the most gifted human ever born..." deliberately concealed his own scientific speculations and they were not discovered and decoded until his brilliantly original deductions had been made anew by others. So, it may be that none of the early Italian work had any lasting influence on the development of the earth sciences. Worse, a scientific recession took place, for reasons unknown, and during the 19th century Italy dropped from third to sixth place in the European intellectual community. During this period of decline, Darwin's concepts were introduced into Italy and, apparently, were so poorly understood that there was no immediate hostile reaction and none of Darwin's books was included in the Catholic church's Index of prohibited books. Sarjeant is amused by marginal notes, written into a copy of Darwin's *Origin* by the Italian botanist, Federico Delphino, that pre-echo some of the ideas of one of Darwin's most vociferous present-day defenders, Stephen Jay Gould. Next to a passage in which Darwin stated that nature proceeds gradually everywhere, Delphino wrote: "Here is a principle I consider false." Thus, according to Sarjeant, Delphino presaged Gould's punctuated evolution and his belief in the importance of the rare geologic event such as catastrophic extinctions caused by changes upon or within the Earth. Sarjeant: "Though many of us differ on these matters from both the 19th century Italian and the 20th-century American, Gould himself should be delighted!". He concludes that although this book does not treat much of the history of geology it merits reading as a case study in perhaps the greatest of the scientific concepts underlying present-day science.

Sarjeant welcomes the publication of *Journals and Memoirs of Thomas Russell, 1791-5,* by Christopher J. Woods, 1991, (Irish Academic Press in association with The Linen Hall Library, Belfast, 199 pp. Hardcover, $29.95). This book, permits us, for the first time, to hear Russell's own voice and learn of his musings, political, romantic, and scientific. Russell was an Irish patriot, antiquarian, naturalist, and geologist who was convicted of high treason for

participating in the uprising of 1803 and hanged at the young age of 36. Up until now, his difficult handwritings, preserved at Trinity College in Dublin, defied transcription, and so he has been familiar to historians mostly through reports of his contemporaries. From the first-hand evidence this book provides of the value of Russell's contributions and the great promise he showed for the future, Sarjeant laments his loss to the development of Irish geology.

Sarjeant finds *Rocks From Space; Meteorites and Meteorite Hunters* by Richard O. Norton, 1994, (Mountain Press Publishing Co., Missoula, Montana. 449 pp, Softcover $20) to be an admirable textbook for introducing geologists to meteoritics, an important subject that is largely ignored in academic courses today. In summing up, Sarjeant says that the history of the study of meteors by astronomers, of meteorites by mineralogists, and of impact phenomena by physical geologists is told lucidly; the different types of meteorites, meteoritic dust and tektites are described and the processes of their genesis discussed. Also, the book is well illustrated with good photographs and clear drawings. But Sarjeant personally regrets that the author has so wholly accepted the "highly dubious concept of a link between meteorite or comet impact and the supposed 'mass extinctions' of past times." In particular, he objects to Norton's stressing of the 'terminal Cretaceous event'--that curiously selective event that allegedly extinguished the dinosaurs and the ammonites...yet permitted most other groups--the lizards and snakes, the mammals and birds, the crocodiles and champsosaurs, the bony fishes and the sharks--to flourish and multiply unscathed." Sarjeant argues that maybe there *was* a meteorite impact, and maybe the iridium layer *does* mark that happening; but if so, and it had any connection with the supposed celestial holocaust, why does that layer never rest upon the remains of the beasts slain? He remarks: "To explain the extinctions by that event is quite as unreasonable as accounting for the extinctions of the mastodons and mammoths by the explosion of atom bombs!" However, stating that he does not wish to end churlishly, Sarjeant writes that this is an excellent work, admirably presented, and deserving to be on the shelves of any geologist brave enough to poke his or her nose out from their particular professional groove to sniff, from time to time, the fresher airs of scientific thought.

Response from a meteoriticist. The impact occurred. It excavated the Chicxulub Crater of Yucatan, 200 to 300 km in diameter, partly in continental and partly in oceanic bedrock. Now deeply buried under Tertiary sediments, the crater, surrounded by three, and possibly four, concentric rings is delineated by seismic, magnetic, and gravity data. The energy release required to excavate such a crater is calculated as 1 to 5 billion megatons. Radiometric dating shows that glass from drill cores that penetrated the megabreccia underlying the crater is 64.98±0.05 million years old--the age of the K/T boundary. In the Americas the boundary is occupied by two layers of impact products: an ejecta blanket of glassy and fragmental material that is thickest in the Gulf of Mexico-Caribbean region and thins out to the north and south. One of the most striking of the ejecta deposits is an 0.5-1-meter layer of aerodynamically-shaped spheres, rods and droplets with glass cores and altered rims lying at the K/T boundary in nearby Haiti. The anhydrous glass cores match the Chicxulub breccia glass in age, and show a range of compositions including those consistent with nonmagmatic melts derived from the thick pile of Cretaceous carbonates and sulfates that were penetrated by the projectile. Overlying the ejecta blanket in the Americas and found at the K/T boundary at more than 100 sites on continents and in deep sea cores around the world is a thin (~30-μm to 3-cm) layer of clay, highly enriched in iridium and other platinum-group metals that are virtually absent in the Earth's crustal rocks but characteristic of most meteorites. The global distribution of the Ir-rich boundary clay is one of the great new discoveries in geology. Other exotic components found in the boundary clay include grains of shocked quartz (duplicating those produced experimentally at shock-wave pressures of 10,000 atmospheres and found in the wall rocks of impact and atomic bomb craters), traces of stishovite, nanometer-sized diamonds (in Alberta) with carbon isotopic ratios matching those of interstellar dust but incompatible with terrestrial carbon, spherules of sanidine (high temperature K-Na feldspar), and of both continental and oceanic source-rock compositions, crystals of Ni-rich magnetite and of Ni-rich magnesioferrite, both of which are spinel-group minerals found in the fusion crusts of meteorites but not in terrestrial rocks. At many sites, the boundary clay also contains soot and fossil carbon suggestive of a global conflagration.

Impact-modeling predicts that the enormously high energy release at the moment of collision will mostly vaporize the impactor as well as much target rock and instantaneously send a plume of vaporized meteorite, rock, and water rising through the atmosphere in the narrow channel opened by the incoming projectile. Once in the stratosphere, the cloud will mushroom out and spread around the globe. Various scenarios have postulated a global fireball followed by a drop in temperatures and inhibition of photosynthesis due to the immense volumes of dust and vapor in the stratosphere, drenching showers of acid rain from the volumes of SO_3 and CO_2 released from

the impacted sediments, and N_2 created by the airblast. Most of these scenarios are too simple, especially in view of possible evidence for stepwise extinctions and multiple impacts, but, in any case the billion-megaton blast certainly would have disrupted global systems, including the atmosphere, hydrosphere, and, presumably, the biosphere.

The question of extinctions, if any, lies entirely within the realm of paleontologists. Since the time of Cuvier and d'Orbigny in the early 19th century, they have been telling us that an extinction occurred at the end of the Cretaceous Period. Current estimates of its magnitude go as high as the extinction of two-thirds of all plants and animals, including 80% of marine plankton and all land animals weighing more than 25 kg. Perhaps there was no causal link between the two events. Perhaps the protozoa, ammonites, dinosaurs and other doomed creatures of the Cretaceous lands and seas weathered the billion-megaton blast with perfect equanimity--but died off anyway. The impact scenario does not require that all areas and populations be affected similarly, but the curiously selective nature of the extinctions demands an explanation whatever the cause. Global concentrations of bone beds dusted with iridium seem very unlikely in view of the normal scatter of (unthreatened) vertebrate populations, and the intervening 65 million years of decomposition, burial, preservation, uplift, and erosion required to expose the skeletons. However, marine sediments on land and in deep sea cores show a rich diversity of microorganisms in the Cretaceous limestones up to the iridium-rich boundary clay and an utter impoverishment, with only two or three species present, in the Tertiary beds immediately above it. As one scientist put it to me: "Certain forams look as though they all went out at 5 o'clock one afternoon."

Now that we have clear evidence from satellite images and lunar breccias that fragments of asteroids and comets have been bombarding the bodies of the solar system from the time of their accretion 4.5 billion years ago, and atom bombs were first exploded in 1945, it does not seem to me to be quite as unreasonable to postulate a link between the K/T impact and the K/T extinction as it would be to credit atom bombs with the demise of the mastodons and mammoths--unless they had the bomb in Middle-earth.

Ursula Marvin

CHINA 1995

In 1995, the Chinese members of INHIGEO were very busy making preparations for the 30th International Geological Congress to be held in Beijing, August 4-14, 1996. Abstracts were due on November 1st. At about that time, a spate of abstracts was received and the Chinese and foreign co-conveners of the sessions, communicating by fax, had to place them in order of priority. By December 15th, speakers had been chosen for two INHIGEO symposia on the topics:

22-1: History of geology and international communication of geoscience ideas; convened by David Branagan and Yusheng Zhai
22-3: Development of geoscience disciplines since the 19th century; convened by Ursula Marvin and Baoheng Shi

Plans were announced for the prepublication of a volume of papers relating to the history of geology in time to distribute it at the IGC. Some of the included papers also would be presented orally in the INHIGEO sessions. Plans also were underway to publish a memorial volume honoring Amadeus W. Grabau (1870-1946), who devoted the latter part of his career to research in China, from papers presented at the IGC Symposia and at a session of the Paleontological Society of China.

Publications of Professor Yang Jing Yi, of the Chinese Academy of Sciences

Yang Jing Yi (1995) On the view of horizontal crustal movement in early geotectonic theories of China. *Journal of Dialectics of Nature*, **17**, No. 6:153-157,
Yang Jing Yi (1995) The influence upon, and the role of the Alpine tectonic school in the early development of geotectonics of China. *Series of History of Geology* **13**:153-157.
Yang Jing Yi (1995) Hutton and his discovery of unconformity. *Encyclopedia of Knowledge*, No. 6.

Yang Jing Yi and David Oldroyd) (1995) On being the first western geologist in China, the work of Raphael Pumpelly (1827-1923), *Annals of Science*, (in press).
Yang Jing Yi (1995) *On earth by ancient Chinese.* Xhing Hua Press, (in press).
Yang Jing Yi (1995) History of geology of China in the 20th century, in *History of Science and Technology of China in the 20th* Century. ed. Dong Guanjbi, Hupei Education Press (in press).

COLOMBIA 1995

The year was marked by preparations for the following two centennial celebrations to be held in 1996: (1) The centennial of the geologist and paleontologist, Don José Royo y Gómez; and (2) The centennial of the leading Colombian geologist of this century, Enrique Hubach.

Don J. Royo y Gómez was born in 1896 in the province of Valencia, Spain. In 1939, after a brilliant career in the Natural Sciences Museum in Madrid, he moved to Colombia where he stayed until 1951 as a research scientist in the Colombian Geological Survey. He then moved to Caracas, Venezuela, and remained there until his death. While in Colombia, Royo y Gómez created the National Geological Museum, soon to be named the "José Royo y Gómez Geological Museum," the most important one of its type in Colombia. He wrote extensively on paleontology, stratigraphy, regional geology, and mineral exploration. He also actively pursued a teaching career. On the centennial of his birth, the Colombian Geological Survey (INGEOMINAS) will rename the Museum for him and organize a series of events including conferences on topics related to his works, several exhibitions, and the publication of a volume in the CEGOC series (Colombian Compilation of Official Geological Studies). INHIGEO member Armando Espinosa will convene one of the conferences emphasizing the importance to geology of Royo y Gómez' works.

Armando Espinosa

COSTA RICA 1995

Gerardo J. Soto and Guillermo E. Alvarado submitted an abstract titled *Volcanic eruptions as triggers for geoscientific development in Costa Rica* to the*Volcanoes and History* Symposium in Italy. Also in 1995 Soto co-authored a paper discussing the problem of exotic blocks of high-grade gneiss that are found on the island of Chira in the Gulf of Nicoya on the west coast of Costa Rica. The blocks appear to have come from Peru. The authors speculate that the blocks were carried as ballast by ships sailing up and down the Pacific coast during the 16th to 19th centuries.

Publications

Alvarado, Guillermo E. and Soto, Gerardo J. (1995) "Volcanic eruptions as triggers for geoscientific development in Costa Rica." INHIGEO Symposium *Volcanoes and History*, Abstract Volume p. 62-63.

Denyer, P. and Soto, G. J. (1995) "Hallazgo de gneises en la isla de Chira: Transporte antropogénico vía marítima entre los siglos XVI y XIX?" *Revista Geológica de América Central* **18**, *in press.*

Gerardo Soto

CZECH REPUBLIC 1995

In the National Technical Museum in Prague two seminars were organized on the history of mining and the history of metallurgy. Papers presented deal with geological questions relevant to mining, and the past record of the geological survey of ferrous and nonferrous ores and fuel deposits. In 1995, the seminar on mining history commemorated Agricola's 500th-year anniversary. Proceedings are expected to appear in the forthcoming weeks. Also in 1995, Proceedings were published of "Discussions in the National Technical Museum" in Prague, including papers entitled "History of Metallurgy," that were given on November 8th 1994.

The first volume of the Proceedings included a study by J. Haubelt entitled "On the fuel situation in the Ostrava (coal-region) industrial complex," featuring the life-work of the geologists of the region, Jaroslav Jiljí Jahn (1865-1934) and Radim Kettner (1891-1967). The second volume included a discussion of the work of Miroslav Kamenický and the educational system in the field of metallurgy in Central Slovakia up to the end of the 18th century. In this series, J. Haubelt contributed a paper on "The Vienna library of Ignac Born (1742-91)." The editors of the Proceedings are M. Rasl and M. Zárybnický, both researchers at the National Technical Museum of Prague.

In the Department of Metallurgy of the Technical University of Ostrava, a seminar was organized on the occasion of the 150th anniversary of the birth of the famous geologist and mountaineer František Pošepný (1836-1896). Pošepný, a professor of mining geology who took early retirement, was active in the Metallurgy and Geology Departments in the town of Příbram in 1879-1889. At the time of his visit to the United States, F. Pošepný presented a monograph entitled "The Genesis of Ore Deposits" at the Congress of the American Association of Metallurgy. This work was published in 1902 in the second Congress Proceedings along with extensive contributions of American geologists. Another outstanding work by Pošepný was "Das Goldvorkommen Bohmens und der Nachbarlander." In the Symposium Proceedings eleven other studies were published including the following five relating to the work of Pošepný: "On the scientific and pedagogic work of Frantisek Pošepný" by J. Havelka, "The present situation concerning the most important ore raw materials exploited in Pošepný's time" by M. Palas, "Did the Pribram region mining activities influence the scientific growth of Frantisek Pošepný?" by von Mikulenka and Z. Podera, and, finally, an informative study "The collections of Frantisek Pošepný deposited in the Geological Pavilion in the Geological-Mining Faculty of the Ostrava University" by B. Adamus and J. Kalendová.

New results were presented in studies on the life-work of the German savant Alexander von Humboldt (1769-1759) in the realm of natural sciences. In 1995, a series of papers was published in which the relations between Humboldt and contemporary Bohemian scientists were analyzed. These works appeared in the Proceedings edited by the representatives of the Humboldt Club of the Czech Republic. Other papers in the Proceedings include "Klarheit über Alexander von Humboldt" by Hanno Beck from Bonn, Germany, the author of an excellent 2-volume biography *Alexander von Humboldt, I, II*, (Wiesbaden 1959-1962). Ulrike Leitner from Berlin spoke on "Eine Reise durch Boehmische Mittelgebirge." In her study she analyzed the topography of a research route through NW Bohemia, taken in August 1791, by two students of the Freiberg Bergakademie (Sachsen), namely: A. von Humboldt and J. K. Friesleben (1774-1864). Ingo Schwarz from Berlin spoke about mutual relations between A. von Humboldt and the Czech savant August Charley Josef Corda (1809-1849). Alexander von Humboldt, himself, together with the King of Prussia, Friedrich Wilhelm III, visited the North Bohemian spa Teplice eleven times. This was discussed by Norbert Krutsky in his study "The Teplice spa and its vicinity in A. von Humbolt's life, and relations to the terminology of some localities in North Bohemia."

The Czech researchers who worked in the Alexander von Humboldt Forschung in Prague published four papers on this subject. Jiri Blucha, the executive editor of the Proceedings, listed "Official Honors awarded to A. von Humboldt in Bohemia." A paper by Jiri Korelka was entitled "Personality and work of A. von Humbodt in the Czech-language milieu up to the end of the 19th century." The paper by Josef Haubelt dealt with the topic "Alexander von Humboldt and education in Central Europe." Last but not least, Jiri Blucha evaluated A. von Humboldt's letters addressed to Czech co-founder of phytopaleontology Kašpar Maria Sternberg (1761-1838). The Proceedings containing these papers were the first in which authors focused their research on the rarely discussed subject of the social background of the development of the geological sciences in Bohemia during the 19th century.

Czech studies of global historical seismicity were conducted in the last years by the finding, collection, and evaluation of pictorial representations of earthquakes that occurred in the pre-instrumental period (*ca* prior to 1900). Lacking other sources, the pictures showing strong earthquake manifestations provide valuable information that lends itself to interpretation of macroseismic data. Two books of drawings, paintings, and other types of representations have been published: "*Historical Earthquakes in Europe*" (Swiss Re, 1991) by Jan Kozák and Marie-Claude Thompson, and "*Terremoti in Italia...*" (ENEA, Roma, 1992), by C. Margottini and J. Kozák.

In 1994-1995, J. Kozák visited the U. S. A. to collect pictorial material on historical earthquakes in the Americas from libraries, archives, and geo-institutions. During his stay, he and J. E. Ebel of Boston College prepared a paper titled "Macro-seismic Information from Historic Pictorial Sources." The paper was accepted for publication in *Pure and Applied Geophysics*, No. 1, 1996.

At the University of California at Berkeley, Kozák presented lectures and seminars on this subject that led to a joint Czech-American paper on the 19th century California earthquakes by Kozák, B. A. Bolt, S. Tobriner, and T. Topozada.

At the Earthquake Engineering Research Institute at the University of California at Richmond, K. Frohmberg expressed an interest in converting J. Kozák's extensive Prague collection of earthquake depictions, which, with over 940 items is the largest in the world, into digital form. This would make the collection globally accessible through the Internet. Both the partners are applying for a common CR-USA Grant for 1996-97 to carry out this project. Kozák's above-mentioned Prague collection has been listed in the Directory of Special Libraries (GALE Res. Inc., Detroit).

In September, 1995, J. Haubelt and J. Kozák, members of INHIGEO in the Czech Republic, presented papers at the INHIGEO symposium in Naples and Catania. Haubelt spoke on "Conflicts Surrounding Volcanic Activity in Central Europe in the Enlightenment and Romantic Periods," and Kozak spoke on "Historical Volcanic Earthquakes--A Pictorial Record."

Josef Haubelt, Jan Kozák

INHIGEO member **Rudolf Musil** reports that he is preparing to publish, in English, accounts of the contributions of all of the leading men of science who have served at the Faculty of Science since its founding at Masaryk University in Brno. He hopes to complete the work in 1996.

FRANCE 1995

The Comité Français d'Histoire de la Géologie (COFRHIGÉO) held three meetings, as usual, in 1995, plus a symposium in Paris on the 17th of May to celebrate the 80th birthday of the founder and president of COFRHIGÉO, François Ellenberger. Talks were presented on themes and/or personalities in which Professor Ellenberger has shown a particular interest during his career as a historian of geology. In view of the international importance of his work in this field, the following three foreign members of COFRHIGÉO took part: Wolfhart Langer of Germany, Martin J. S. Rudwick , currently in the U. S. A., and Hugh S. Torrens of the U. K. Others of his friends who could not be present submitted papers written in his honor. These included Kennard B. Bork, Albert V. Carozzi, Cecil J. Schneer, and Kenneth L. Taylor of the United States, and Nicoletta Morello of Italy. The Committee is presently editing these papers in a book: *From Geology to its History*, with a foreward by Helmut Hölder in Germany. Publication is expected in December, 1996.

After the traditional group photograph was taken, M. Gabriel Gohau, Secretary of COFRHIGÉO welcomed the participants and then opened the session, which included the following papers:

J. -C. Plaziat: *L'importance des coquilles fossiles du Tertiaire parisien dans l'oeuvre scientifique et artistique de Bernard Palissy à la fin du XVIème siècle.*
J. Gaudant and Mme G. Bouillet: *Aux sources de la Paléoichthyologie: les "Doléances et revendications des poissons" de J. -J. Scheuchzer (1708).*
W. Langer: *L'exploration géologique de l'Eifel (1780-1814) par géologues francophones.*
M. J. Rudwick: *Smith, Cuvier et Brongniart et la reconstitution de la géohistoire.*
G. Gohou: La naissance de la méthode *"actualiste" en géologie.*
Ph. Grandchamp: *Les origines de l'affaire de Petit-Coeur, ou la découverte du célèbre gisement de végétaux fossiles et de bélemnites replacée dans son véritable contexte.*
H. Tintant: *Alcide d'Orbigny (1802-1857) ou l'évolution des faunes.*
G. Laurent: *Paléontologie et évolution en 1850: état de la question d'après l'oeuvre de Heinrich-Georg Bronn (1800-1862).*

The second part of the meeting was devoted to honors rendered to the President by MM. M. Durand-Delga, B. Gèze, and H. S. Torrens. The following three communications, based on writings and personal reminiscences--without forgetting humor--were aimed at evoking the scientific character of M. François Ellenberger.

B. Gèze: *La guerre des trois n'aura pas lieu!*
M. Durand-Delga: *De la géologie à son histoire: l'itinéraire scientifique de François Ellenberger.*
H. Torrens: *Hommage et félicitations à François Ellenberger.*

As the next order of the day, M. Gohau presented to the President a prepublication manuscript of the volume entitled: *From Geology to Its History: Essays presented to François Ellenberger on his 80th Birthday.* It included the following chapters by foreign colleagues not present at the meeting:

K. B. Bork: *La relation entre Brongniart et Cleaveland, mise en évidence par un exemplaire dédicacé du "Mémoire sur les terrains de sédiment supérieurs calcaréo-trappéens du Vicentin (1823) de Brongniart."*
A. V. Carozzi: *Symboles et Codes pour la simplification et la standardisation des observations géologiques de terrain: un projet inédit du 18ème siècle par Horace-Bénédict de Saussure (1795-1797).*
N. Morello: *Aux débuts de la volcanologie moderne: Giovanni Alfonso Borelli et son "Historia et meteorologia incendi aetnaei anni 1669" (Reggio Calabria, 1670).*
C. J. Schneer: *The last "Theory of the Earth: James Hall and the concept of the geosyncline.*
K. L. Taylor: *La genèse d'un naturaliste: Desmarest, la lecture et la nature.*

Holding in his hands the manuscript of the volume dedicated to him, Professor Ellenberger, expressed with deep emotion his gratitude to those who arranged for it, contributed chapters, and saw it through to completion. He also thanked the organizers of the meeting and spoke of his great pleasure at observing that COFRHIGÉO, with the help of all, had matured to an organization that could present such symposia at a level equaling those of the great international congresses. The guests were then directed to the buffet, elegantly set for the president's birthday. Then each one raised his glass to the health of COFRHIGÉO.

The following lectures delivered at the three traditional meetings of COFRHIGÉO, on March 8th, June 21st, and November 29th, were issued in the *Travaux du Comité français d'Histoire de la Géologie*, 3rd Series, Volume 9:

Alain Perrodon: *Un siècle de recherches pétrolières.*
Gaston Godard: *Histoire d'une énigme: Les buttes coquillières de Saint-Michel-en-l'Herm (Vendée).*
Marie-Françoise Aufrère: *De la "galère aréïque" à l'Histoire de la Géomorphologie. 374 lettres d'Emmanuel de Martonne à Léon Aufrère, 1922-1952.*
Jan Houghton Brunn: *A la poursuite des mystères de l'orogenèse. Souvenirs géologiques.*
Philippe Taquet: *Les premiers pas d'un naturaliste sur les sentiers du Württemberg: récit inédit d'un jeune étudiant nommé Georges Cuvier.*
Geneviève Bouillet: *Les pierres utilitaires dans les constructions romaines: matériaux et techniques.*
Fernand Joly: *Soixante ans de géographie physique française vécue de l'intérieur (1934-1995).*
Pierre F. Burollet: *L'exploration de la Tunisie avant la première guerre mondiale.*
Georges Busson et Annie Cornée: *La loi de Haug (1900) revisitée: un paradoxe que s'évanouit au sujet des transgressions et des régressions marines.*

The Commitee published the volume dedicated to the Swiss geologist Eugène Wegmann (see Book Review by C. J. Schneer, p. 57). The next project is a joint meeting in collaboration with the French Geological Society to celebrate the 20th birthday of our Committee: COFRHIGÉO 1976-1996.

Jean Gaudant

GERMANY 1995

The annual meeting of the working group "History of Geosciences" took place in June 1995 at Alfred-Wegener-Institut in Bremerhaven. The focus of attention was on polar geological scientific research lectures and discussions on the necessity of studying history of science. There also was a visit to the research icebreaker "Polarstern." The venue preparations were conducted by Dr. Reinhard A. Krause.

On the 21st of January, 1995, the State Museum for Natural Sciences at Stuttgart held a colloquium marking Professor Helmut Hölder's 80th birthday. Professor Otfried Wagenbreth presented his farewell lecture on the 1st of

February, 1995, in the Senate Hall of Technical University Mining Academy, Freiberg. In March, a conference on "Paintings of Climate-Clouds in History and the Present" took place at the Institute of Meteorology of the Free University of Berlin. In September, 1995, the meteorology historians held a colloquium entitled "History of Meteorology."

The following three important exhibitions were held in 1995:

"Treasure from the Private Library of Abraham Gottlob Werner," at Cologne in May
"Salt Force History," from May to October in Augsburg
"Myth Water: Symbolism and History of Civilization," at Karlsruhe from August to October

On the 29th of April, 1995, in Zechlinerhütte the Alfred-Wegener-Memorial was reopened, and on the 14th of June in Freiberg (Saxony) a monument to Alexander von Humboldt and his fellow student Johann Carl Freiesleben was unveiled. Also in 1995, commemorative plaques to founders of the Mining Academy of Freiberg, Friedrich Wilhelm von Oppel and Friedrich Anton von Heynitz were unveiled in the cloister of Freiberg cathedral and the church of Bartholomew at Belgern, respectively.

In September German INHIGEO members Martin Guntau, Rudolf Daber, Bernhard Fritscher, Wolfhart Langer, Peter Schmidt, and Otfried Wagenbreth participated in the XXth INHIGEO Symposium "On Volcanoes and History," in Italy.

Conferences and activities planned for 1996 are in preparation. These include the Symposium on the History of Mineralogy, Petrology and Geochemistry to be held in Munich in March; the Latin America - Hessen conference at Borken in June; and the symposium on the occasion of 100th anniversary of the death of the German geologist Heinrich Ernst Beyrich (1815-1896), in Berlin in July, 1996.

Publications

Hoyer, E. M.: *Sächsischer Serpentin. Ein Stein und seine Verwendung. Begleitbuch zur Ausstellung 'Marmor Zeblicicius - Zoeblitzer Serpentinstein - ein unbekannter Schatz des Erzgebirges.'* Leipzig 1995.

Ludwig, A. O.: *Die Erforschung der quartären Entwicklung der Südlichen Ostsee, von ihren Anfängen bis um 1980.* - Hamburg 1995 (Deutsche Hydrographische Zeitschrift. Suppl.-Bd. 3).

Luedecke, C.: *Die deutsche Polarforschung seit der Jahrenhundertwende und der Einfluss Erich von Drygalskis.* - Bremerhaven 1995 (Berichte zur Polarforschung. H. 158).

Richter, S.H.: *Prof. Dr. Otfried Wagenbreth, Bibliographie seiner veroeffentlichungen.* Mit einem vorwort von W. Arnold. Freiberg,1995 (Veroffentlichungen der Bibliothek der Georgius Agricola der TU Bergakademie Freiberg, Nr. 130).

Schmidt, P.: *Abraham Gottlob Werner (1749-1817) und seine Privatbibliothek, Historische Reflexionen.* Bonn 1995.

Selbmann, S.: *Mythos Wasser, Symbolik und Kulturgeschichte.* - Karsruhe 1995.

Salz Macht Geschichte. Katalog. - Hrsg. von M. Treml. R. Riepertiinger u. E. Brockhoff, Mit einen Sprachkristall von U. Dick. - Augsburg 1995 (Veroffentlichungen zur Bayerischen Geschichte und Kultur. Nr. 30).

Vierhundert Jahre Mercator, Vierhundert Jahre Atlas. "Die ganze welt zwischen zwei Buchdecken: Eine Geschichte der Atlanten. - Hrsg. von H. Wolff. - Weissenhorn 1995 (Bayerische Staatsbibliothek. Ausstellungskataloge, Bd. 65).

Martin Guntau, Peter Schmidt

Communications from other INHIGEO members in Germany

In 1995 **Wolhart Langer**, Professor of Paleontology at Bonn, finished a short paper for publication in the Jubilee Volume in honor of Prince Maximilian of Wied. In 1839-1841 Wied published the results of his expedition along the Missouri River. Although Wied had no special knowledge of geosciences he wrote descriptions of lasting interest on landforms he observed in Kansas and the Dakotas.

Wolf von Engelhardt, Professor Emeritus at the University of Tübingen, lectured at that university during the winter term of 1995-1996 on "Geology in the 17th and 18th Centuries." On December 13th, he presented an invited lecture at the University of Freiberg on "Goethe and Geology." For the Leopoldina Edition on Goethe's writings on

Geology and Mineralogy, von Engelhardt completed the manuscript of Volume 8A dealing with supplements and commentaries to Goethe's studies on those subjects during the years 1806-1820. He sent to press the manuscript, equivalent to about 1000 printed pages, for publication in 1996. Section 1, containing eleven volumes of text, already have appeared. He now is at work on the period 1820-1832.

HUNGARY 1995

A special gathering was held in September to celebrate the 80th birthday of Dr. Gábor Csíky, an Honorary Member of the Hungarian Geological Society, a member of its Board, and a founder and President of the Section on the History of Hungarian Geology. Dr. Csíky also was one of the founding members of the Association of Hungarian Geophysicists, a member of the Hungarian Society of Mining and Metallurgy, the Hungarian Geographical Society, and of INHIGEO. He holds several professional distinctions and honors. Born at Segesvár, in Transylvania, on September 20th,1915, he received his scientific and technical education in Hungary and Roumania and obtained the PhD degree in Mineralogy, Geology, and Botany at the Technical University of Budapest in 1941. He made a distinguished career in the Hungarian petroleum industry. A 50-page booklet containing Dr. Csíky's entire bibliography of published writings, along with greetings from INHIGEO and several colleagues, was published in his honor. It shows that from 1941 to 1994 he authored or co-authored 439 publications.

Endre Dudich

Endre Dudich, former Secretary-General of INHIGEO, and Gabor Papp, of the Hungarian Natural History Museum in Budapest, attended the "Volcanoes and History" Symposium in Italy. Papp presented a paper on "Johann Ehrenreich von Fichtel (1732-1795), an early vulcanist from Hungary."

On November 3, 1995, Dr. Dudich wrote a letter on behalf of the Historical Section of the Hungarian geological Society expressing full support for Professor Martin Guntau's proposal to organize an INHIGEO Symposium in Germany in 1998 on the impact of Abraham Gottlob Werner on the development of European geology. Dudich notes that in Werner's times and even much later, links were very close and interactive between the Mining Academy of Freiberg in Saxony and the Mining Academy of Schemnitz in Hungary (now: Banská Stiavnica in Slovakia) and certainly would be worth an in-depth study and critical assessment. The Hungarian Geological Society would be glad to attend and contribute. (See pages 7 and 17 for discussions of whether to hold an INHIGEO Symposium in 1998.)

INDIA 1995

In September, INHIGEO member Kotapalli S. Murty presented a paper at the meeting on Cultural Heritage in Libraries of Geosciences, Mining and Metallurgy, held at Leoben, Austria. He submitted an abstract on the "History of Volcanology in India" to the INHIGEO Symposium in Italy. He was unable to attend the meeting, but in his abstract he pointed out that although the Indian mainland has been spared volcanic activity (but not earthquakes) in modern times, occasional eruptions have been observed from 1795 to 1991at Barren Island in the Bay of Bengal.

IRELAND 1995

1995 was the 150th anniversary of the foundation of the Geological Survey of Ireland and the Queen's Colleges of Cork (now University College), Galway (now titled University College), and Belfast.

The Geological Survey of Ireland marked its sesquicentenary in a number of ways. An exhibition of watercolors by G. V. Du Noyer (1817-1869), one of its finest geologists, was held in the National Gallery of Ireland from June through August. A fine, well-illustrated book was published to accompany the exhibition and contains six essays that focus on Du Noyer's life and his antiquarian, geological, zoological and botanical paintings (Croke, 1995).

INHIGEO member Patrick Wyse Jackson attended the Symposium in Italy in September, where he presented two papers, one titled *The Collections of Italian Volcanic Material at Trinity College, Dublin, Ireland,* and the other, *The Reverend George Graydon (c. 1753-1803): an Irish Traveller in the Volcanic Provinces of Italy.*

December saw publication of *North from the Hook,* a comprehensive history of the Geological Survey of Ireland by Gordon L. Herries Davies, an INHIGEO member since 1973. It recounts the often troubled, turbulent, and triumphant events surrounding the mapping of Ireland's rocks from 1845 until the present time (see Book Reviews).

Publications

Archer, J. B. (1995) "Field folios: Du Noyer's outdoor geological artistry." In Croke, F. (ed.), *George Victor Du Noyer 1817-1869: hidden landscapes.* pp. 48-63. The National Gallery of Ireland, Dublin.

Coffey, P. (1995) "George Victor Du Noyer 1817-1869: artist, geologist and antiquary." *Journal of the Royal Society of Antiquaries of Ireland.* 123 (1993) pp. 102-119.

Croke, F. (ed.). (1995) *George Victor Du Noyer 1817-1869: hidden landscapes.* The National Gallery of Ireland, Dublin, 88. pp.

Herries Davies, G. L. (1995) *North from the Hook: 150 years of the Geological Survey of Ireland.* Dublin, Geological Survey of Ireland, pp. xi + 342.

Herries Davies, G. L. (1995) "Flowers amidst the ruins." In Croke, F. (ed.), *George Victor Du Noyer 1817-1869: hidden landscapes.* pp. 16-27. The National Gallery of Ireland, Dublin.

Herries Davies, G. L. (1995) "The Stenonian Revolution." In Giglia, G., Maccagni, C and Morello, N. (eds). *Rocks, fossils and history.* pp. 45-49. Festina Lente, Firenze.

Monaghan, N. T. and Sides, E. (1995) "Of fossils and fish: the paleontological and zoological illustrations of George Victor Du Noyer." In Croke, F. (ed.), *George Victor Du Noyer 1817-1869: hidden landscapes.* pp. 74-84. The National Gallery of Ireland, Dublin.

Vaccari, E. and Wyse Jackson, P. N. 1995. "The fossil fishes of Bolca and the travels in Italy of the Irish cleric George Graydon in 1791." *Museol. Sci.* **4**:57-81.

Wyse Jackson, P.N. 1995. Patrick Ganly (1809-1899) and the discovery of evidence of way-up in rocks on the Dingle Peninsula. *The Kerry Magazine* **7**:8-9.

Patrick N. Wyse Jackson

Patrick Wyse Jackson is the editor of *The Geological Curator,* a journal issued by the Geological Curator's Group which is affiliated to the Geological Society of London. The Group was founded in 1974 to improve the status of geology in museums and similar institutions, and to improve the standard of geological curation in general. Each issue contains articles and book reviews of interest to historians of geology, and a Lost and Found section listing mineral specimens, fossils, and sometimes whole collections that are lost from museums. These communications are of special interest to curators, but also to anyone interested in the history of museums and collections. For information on *The Geological Curator,* contact Patrick Wyse Jackson at address in the INHIGEO Membership List.

UBM

ISRAEL 1995

Professor Nir Orion of the Weizmann Institute of Science in Rehovot, elected to INHIGEO in 1994, attended the "Volcanoes and History" Symposium in Italy. Professor Dov Ginsburg, a member since 1984, was unable to attend, but has sent papers indicating that he is continuing his long-term project of interpreting biblical passages relating to minerals and geological formations in modern terms.

ITALY 1995

The highlight of the year was the XXth International INHIGEO Symposium held in Naples, the Aeolian Islands, and Catania (see pp. 2 - 9). The organizers would like to thank all the participants for having contributed to making the general atmosphere of the symposium so relaxed, lively, and fruitful for social and scientific exchanges.

In June 1995 the Societa Veneziana di Scienze Naturali and the Museum of Natural History of Venice organized a meeting on "Giovanni Arduino and the Venetian geologists of the 18th century," for celebrating the 20th anniversary of the foundation of the Societa Veneziana di Scienze Naturali. The papers given in this meeting treated science in 18th century Veneto (C. Gibin), the collection of early books on geology in the Museum of Natural History of Venice (F. Bizzarrini), the Bolca fossil locality between the 16th and 18th century (C. Lazzari), Giovanni Arduino and the development of historical geology (E. Vaccari), the nomination of Giovanni Arduino as Superintendant of Agriculture (G. Zoccoletto), the scientific activity of Giuseppe Innocente (A. Bassani). The Proceedings (in Italian) have been printed and can be ordered from Corrado Lazzari, c/o Societa Veneziana di Scienze Naturali, S. Croce 1730, 30135 Venezia, Italy.

In October, 1995, a Symposium on "Earth Sciences in the Venetian region during the 19th century" was held in the Istituto Veneto di Scienze, Lettere ed Arti in Venice: eleven papers were read on topics such as the palaeontological researches of Tommaso Antonio Catullo (N. Morello), the theory of submarine volcanoes by Giambattista Brocchi (L. Ciancio), the role of the geologists from the Vicentine area (P. Preto), the history of some geo-palaeontological collections in the Natural History Museums of Trento and Verona (G. Tomasi; L. Sorbini); the geological work of Luigi Castellini and Pietro Maraschini (E. Vaccari); the geological studies in Lombardy (A. Visconti); the background of the mineral surveys of John Williams in Veneto (H. Torrens); the mining school of Agordo (L. Santomaso); the situation of Venetian mines and metallurgy (R. Vergani); the discovery of glaciers in Veneto (G. Zanon). The Proceedings will be published by the Istituto Veneto in 1997. For further information please write to Dr. Alessandro Franchini, Istituto Veneto di Scienze, Lettere ed Arti, Campo S. Stefano 2945, 30124 Venezia (Italy): Fax: (39) 41 521 0598.

Also in October,1995, the Italian working group on the history of science of the 18th century had a meeting in the Center "Lazzaro Spallanzani" of Scandiano (Reggio Emilia); the subject of the meeting was the scientific work of Lazzaro Spallanzani (1729-1799) in preparation for the planned celebrations for the bicentenary of his death in 1999. During this meeting Ezio Vaccari presented a research project on the geological studies of Spallanzani.

Again in October 1995 the Italian Glaciological Committee, for celebrating the centenary of its foundation in 1895, organized the international symposium: "One hundred years of glaciological researches in Italy," which took place in the Academy of Sciences of Turin. For further information please contact the Comitato Glaciologico Italiano, c/o Dipartimento di Scienze della Terra, Universita di Torino, via Valperga Caluso 35, 10125 Torino, Italy.

The activity of the "Centro Studi di Storia della Geologia e della Paleontologia" (see the first circular in the *INHGEO Newsletter No. 27*) officially started with the organization of a conference on the scientific debate on the Universal Deluge from 16th to 20th century, held in Milan on the 1st of December 1995. The conference took place in the Palazzo Reale of Milan, which was hosting the exhibition of the Leicester Code by Leonardo da Vinci. Giovanni Pinna talked about Leonardo, the fossils and the Deluge; Nicoletta Morello about fossils and Deluge in the 17th century; Claudine Cohen about Johann Jakob Scheuchzer and his "diluvian" writings; Ezio Vaccari about the Deluge and the mountains in the 18th century. These papers will be published in one of the next issues of the journal "Paleontologia Lombarda" by the Museum of Natural History of Milan. For any enquiries or information about the "Centro Studi", please contact Giovanni Pinna, Museo Civico di Storia Naturale, corso Venezia 55, 20121 Milano, Italy; Fax: (39) 27 602 2287.

From the 16th of December, 1995, to the 31st of March 1996 an exhibition on the Bolognese geologist Giuseppe Scarabelli (1820-1905) was held in Imola near Bologna. A guide to the exhibition and a beautiful catalogue with many colour illustrations of geological maps and drawings by Scarabelli have been printed. For further information please contact Dr. Claudia Pedrini, Musei Comunali di Imola, via Gaspare Sacchi 4, 40026 Imola (BO), Italy: Fax (39) 542 60 2638.

In September, 1995, *Rocks, Fossils and History,* the Proceedings of the 13th INHIGEO Symposium held in Pisa and Padova (Italy) in 1987 was published in Florence. The book is available on request. Please contact Nicoletta Morello, Dipartimento di Storia Moderna e Contemporanea, Universita di Genova, via Balbi 6, 16126 Genova (Italy): Fax (39) 10 2099826. (See review, p. 59.)

Publications

Boschi E., Ferrari G., Gasperini P., Guidoboni E., Smrigero G. & Vensise G., *Catalogo dei forti terremoti in Italia dal 461 a.C. al 1980* [Catalogue of great earthquakes in Italy from 461 B.C. to 1980], Roma Istituto Nazionale di Geofisica - SGA Storia Geofisica Ambiente, 1995, 973 pp. (with one CD-ROM enclosed).

Ciancio L., "The correspondence of a "virtuoso" of the late Enlightenment: John Strange and the relationship between British and Italian naturalists", *Archives of Natural History, 22 (1),* 1995, pp. 119- 129.

Ciancio L., *Autopsie della Terra. Illuminismo e geologia in Alberto Fortis (1741-1803)* [Autopsies of the Earth. Enlightenment and geology in Alberto Fortis], Firenze, L.S. Olschki, 1995, 385 pp.

Ciancio L., "Alberto Fortis e la pratica del viaggio naturalistico" [Alberto Fortis and the experience of the naturalistic travel], *Nuncius. Annali di Storia della Scienza,* 10 (2), 1995, pp. 617-644.

Contardi S., *La rivincita dei 'filosofi di carta" Saggio sulfa filosofa naturale di Antonio Vallisneri junior* [Essay on the natural philosophy of Antonio Vallisneri junior], Firenze, L.S. Olschki, 1994, 133 pp.

Giglia G., Maccagni C. & Morello N. (editors), *Rocks, Fossils and History. Proceedings of the 13th INHIGEO Symposium Pisa-Padova (Italy) 24 /09 - 1/10* 1987, Firenze, Festina Lente, 1995, 287 pp.

Guidoboni E. (with the collaboration of A. Comastri & G. Traina), *Catalogue of ancient earthquakes in the Mediterranean area up to the 10th century,* Roma, Istituto Nazionale di Geofisica, 1994, 504 pp.

Lazzari C. & Bizzarrini F. (editors), *Giovanni Arduino e i geologi veneti del Settecento. Atti del Seminario* [Proceedings of the meeting Giovanni Arduino and the Venetian geologists of the 18th century], Venezia, Societa Veneziana di Scienze Naturali, 1996, 91 pp.

Morello N., "Alle radici della mineralogia sistematica: il secolo XVI" [The origins of systematic mineralogy: the 16th century], *Geologica Romana,* 29, 1993, pp. 567-582.

Pacciarelli M. & Vai G. B. (editors), *Musei Civici di Imola: Catalogo delle raccolte. La collezione Scarabelli. 1. Geologia* [Catalogue of the Scarabelli geological collection in the Civic Museum of Imola], Imola, Grafis, 1995, 407 pp.

Pinna G., *La natura paleontologica dell'evolazione* [The palaeontological nature of evolution], Torino, Einaudi, 1995, 500 pp.

Preto P., *Girolamo Festari. Medicina, "lumi" e geologia nella Valdagno del '700* [Girolamo Festari. Medicine, Enlightenment and Geology in 18th century Valdagno], Valdagno, Edizione del Comune di Valdagno, 1995, 188 pp.

Sarti C., "Le ammoniti nella storia della geologia tra XVI e XX secolo" [Ammonites in the History of Geology between 16th and 20th century], *Museologia Scientifica,* 11 (1 -2), 1994, pp. 13-28.

Vaccari E., "I manoscritti di uno scienziato veneto del Settecento: notizie storiche e catalogo del fondo Giovanni Arduino della Biblioteca Civica di Verona" [The manuscripts of an eighteenth century Venetian scientist: catalogue and history of the Giovanni Arduino collection in the Public Library of Verona], *Atti dell'Istituto Veneto di Scienze, Lettere ed Arti,* **151,** 1992-1993, Classe di Scienze Fisiche, Matematiche e Naturali, pp. 271-373.

Vaccari E. & Monaghan, N. T., "I mineral) di Giovanni Arduino nella collezione geo-mineralogica di Nathanael GottEried Leske: verifica di un cave di comunicazione scientifica nell'Europa del tardo Settecento" [Giovanni Arduino's minerals in the Leskean geological cabinet: a case of scientific comunication in the late eighteenth century Europe], *Geologica Romana, 297* 1993, pp. 547-565.

Vaccari E. & Wyse Jackson, P. N., "The fossil fishes of Bolca and the Travels in Italy of the Irish Cleric George Graydon in 1791", *Museologia scientifica, 12 (1-2),* 1995, pp. 57-81.

Ezio Vaccari, Nicoletta Morello

JAPAN 1994-1995

The "Gathering on the History of Geological Sciences" holds two ordinary meetings each year, and one evening meeting in association with the Annual Meeting of the Geological Society of Japan. The Gathering has published the following Newsletters: Nos. 1, 2, and 3 in 1994; Nos. 4 and 5 in 1995.

Yamashita retired as Secretary in June 1995, and was succeeded by Y. Suzuki and T. Kutsukake.

The following papers were presented at the meetings designated below:

Ordinary meeting in Tokyo, 3 December 1994.

D. Shimizu: *Earthquake-generating fault hypothesis in the history of seismology in Japan.*
Y. Fujita: *Some Japanese scientists' views on the creativity of natural scientists.*
Y. Suzuki: *Report on the XIXth International INHIGEO Symposium in Sydney.*

Evening meeting in association with the Annual Meeting of GSJ in Hiroshima, 3 April 1995.

K. Shiraki: *Yasushi Kikuchi's discovery of boninite in Bonin Island.*
S. Akagi: *History of geology of the Tottori Prefecture in the early modern and modern ages.*

Ordinary Meeting in Tokyo, 24 June 1995.

T. Kutsukake: *On Albertus Magnus' books on minerals.*
H. Nagai: *History of Paleozoic and Mesozoic radiolarian biostratigraphy in the Mino belt, Central Honshu, Japan.*
T. Shibasaki: *Reconstruction plan of the Geological Museum of Bandung, Indonesia, to atone for the Japanese invasion during World War II.*

Ordinary Meeting in Tokyo, 16 Dec. 1995.

D. Shimizu: *Invention of a clinometer in relation to land surveying in the Yedo era.*
I. Imai: *Geological study by K. Miyazawa: a Poet, and his Teacher, T. Seki, a Pedologist.*
M. Yajima: *Sociological and paleozoological studies by Frans Hilgendorf and his contribution to Japanese biology*
T. Kutsukake: *Report on the third Hutton Symposium and field excursion in New England.*
K. Suwa: *Report on the XXth International INHIGEO Symposium in Italy.*
[For sketches made on field excursions by K. Yagi and K. Suwa, see pages 2-6. UBM]

In September 1995 K. Yagi and K. Suwa attended at the XXth International INHIGEO Symposium in Italy, and presented the following papers in the 4th Scientific Session held on the Island of Vulcano.

K. Yagi: *Petrological studies on Showa Shinzan, Japan at the time of its Formation.*
K. Suwa: *Historical Review on volcanic petrology in the University of Tokyo.*

It is our great sorrow to report the death of Prof. Teiichi Kobayashi, Member of Japan Academy and Professor Emeritus of the University of Tokyo at 94 on 14 Jan. 1996. He was a member of INHIGEO for many years.

Yasumoto Suzuki, Kenzo Yagi

The INHIGEO Board deeply regrets the loss of Professor Kobayashi and extends its deepest sympathy to his family and colleagues. We would be glad to include a memorial note in the next issue of the *Newsletter* if we receive one or biographical information for one. [UBM]

MALTA 1994

In a paper called '*The Arabian Voyage 1761-67' and Malta: Forsskål and his Contribution to the study of Local Natural History*, INHIGEO Member George Zammit Maempel discusses the importance of the work of the renowned Swedish naturalist, Petrus Forsskål (1732-1763). Forsskål compiled the earliest known list of the fossils of Malta and described a new species of fossil echinoid he found there. In addition, he provided the first list of the fish found in Maltese waters and a short list of local wild plants. He accomplished all this during a six-day stop at the island during an expedition to the Orient. Born in Sweden and educated at the Universities of Uppsala and Göttingen, Forsskål distinguished himself at an early age as a natural historian and philosopher. As a faculty member at Uppsala he issued a powerful challenge to government censorship in a book *Thoughts on Civil Liberty*,

which he published privately on November 23, 1759, and distributed to his students that very afternoon. In response, the government of Sweden forced him to leave the country and burned the few copies of his work that they could round up. Shortly after he left Sweden, Forsskål was invited to join the first scientific expedition to the orient--Egypt, Arabia, and Syria--as a naturalist on the ship, Grönland, which, accompanied by three merchant vessels, sailed from Copenhagen on January 10, 1761. The passage to the Mediterranean was beset by bad weather and threats from foreign ships, and made additionally uncomfortable by petty jealousies and bickering among the six scientists aboard--two Danes, two Germans, and two Swedes. Scientific investigations were accomplished, however. In the midst of battle preparations, the young German astronomer, Carsten Niebuhr (1733-1815), set up his astrolabe and telescope on the foredeck to follow the transit of the planet Venus across the sun's disk. Unperturbed by the threat of war, Niebuhr carried on his investigations--complaining only that, despite calm weather, the ship's pitching prevented him from attaining the accuracy he desired. Forsskål and Niebuhr roamed Malta together while the expedition stopped there from June 14-20, 1761. Interestingly, less than a year after Forsskål was exiled, the Swedish Parliament set up a committee to consider the question of censorship and six years later they abolished it completely. Forsskål, however, did not live to relish his triumph--he had died of the plague in Yemen three years earlier. Maempel discusses in detail Forsskål's contributions to the natural history of Malta in the light of present knowledge. In the last few pages he outlines the grievous fate of the Danish expedition of which Carsten Niebuhr was the sole surviving scientist. Maempel's account appeared in a 75-page booklet with 20 plates in the *Proceedings of History Week 1992*, published by The Malta Historical Society in 1994.

Ursula Marvin

NEW ZEALAND 1995

During the year membership of the Historical Studies Group of the Geological Society of New Zealand passed the half-century mark. This represents approximately 7 per cent of the Society but a further 14 copies of our group newsletter are sent to institutions and individuals who are not Society members. The newsletter is still the main focus of our activity but we continue to contribute to the *Dictionary of New Zealand Biography*. Members have also been invited to write articles for the new *Dictionary of National Biography* to be published by Oxford University Press.

Progress is being made in the universities. In the Department of Geology at the University of Auckland, the first New Zealand post-graduate thesis study on a historical topic has now begun. As in the previous year we were able to have a special Historical Session at the Annual Conference of the Geological Society of New Zealand.

This year the Historical Studies Group has turned its attention to the Gideon Mantell collections in New Zealand. Through Gideon's son Walter, who emigrated to New Zealand in 1840, all the Mantell papers and some of his specimens are in New Zealand institutions. For over one hundred years all this material–specimens, books, papers - has remained unnoticed by New Zealand geologists. Fortunately, the Historical Studies Group is now taking a serious interest in what is probably the most important concentration of resource material in the southern hemisphere for research into the early history of geology. Initially, our attention is being directed to the Mantell fossils and already identified is the Iguanodon tooth submitted to Cuvier for identification in 1823. At the Alexander Turnbull Library in Wellington are about one thousand books that originally came from Gideon's own library. The Mantell papers at the library provide a formidable research challenge--the inventory itself runs to over three hundred pages. Amongst the books are proof copies corrected by Gideon.

Alan P. Mason

NORWAY 1995

INHIGEO member Geir Hestmark attended the "Volcanoes and History" Symposium in Italy. Although he did not submit an abstract, he participated in lively discussions inside the meetings and on the field excursions. We look forward to seeing him at future meetings.
[UBM]

POLAND 1995

In Poland, the following three events relating to the history of geosciences were of international importance:

The Museum of the Earth organized an exhibition in the Museum of Ignacy Domeyko (1802-1889) in Krupowo near Lida in Byelorussia--one of the localities where this eminent geoscientist spent his youth before being forced to emigrate by Tsarist authorities. Domeyko, called the father of modern Polish mineralogy, was the founder of the Chilean mining industry and a reformer and organizer of the higher school system in Chile. For 16 years (1867-1883) he was the Rector of Santiago University. J. Garbowska and K. Jakubowski prepared a booklet in Polish and Byelorussian on I. Domeyko for this exhibition. The Domeyko Museum was opened in August 1995.

In October, a scientific conference was held in Vilnius, Lithuania, in celebration of the work of the geologist and paleontologist Czeslaw Pachucki (1898-1965), on the 30th anniversary of his death. He had taught at the universities in Kaunas and Vilnius in Lithuania, and Wroclaw and Lublin in Poland. Twelve lectures relating to Professor Pachuki's scientific work were delivered by eight representatives of Lithuanian and seven of Polish geological institutions.

Lithuanian geologists, A. Gaigalas and V. Dvareckas, took part in a symposium devoted to the scientific, theatrical, and literary achievements of Mieczyslaw Limanowski (1876-1948), an eminent researcher of the European Alpine system and initiator of international studies of the Quaternary system, a precursor of INQUA. During this symposium 27 lectures were delivered at the Copernicus University of Torun, which organized the symposium in cooperation with the State Geological Institute in Warsaw. Limanowski's accomplishments in geological sciences were discussed by Z. Kotanski and Z. Wójcik.

The 66th meeting of the Geological Society of Poland was devoted to a recapitulation of 50 years of Polish geological research in Lower Silesia. Several historical papers were included into the program.

A symposium devoted to the works of Stanislaw Staszic (1755-1826), called the father of Polish geology, was organized in Pila, Staszic's birthplace, by the local Museum and Institute of Oil and Gas. INHIGEO members S. Czarniecki, A. S. Kleczkowski, J. Skoczylas and Z. Wójcik delivered lectures on geological studies in Western Poland during the 18th-20th centuries, and on the history of mining-geological-metallurgical schools in the first half of 19th century. During this conference, S. Czarniecki made public his own collection of Staszicieana. He also authored the exhibition catalog *Nature in Old Book Illustrations* in Kazimierz Dolny, Central Poland, and *Chapters from the History of Geology in Cracow*, presented at the International Exhibition of Minerals "Wawelstone" in that town.

Publications

Bolewski A., 1995. "The contribution of the Academy of Mining in Cracow to the reconstruction of economy after the demarcation of the Polish frontiers." *Inst. Social Sciences Acad. Mining and Metallurgy*, Cracow, 73 pp. (in Polish).

Bolewski A., 1995. "The secret education of the scientific staff of the Academy of Mining during the Nazi occupation, 1939-1945." In: *Civil and military secret education during the occupation, 1939-1945.* Editors: R. Czekajowski and J. Kwiek, Cracow, 57-94, (in Polish).

Czarniecki S., 1995. "Commemoration of Staszic's contributions to geoscientific nomenclature." *Pila*, 3 pp. (in Polish).

Czarniecki S., 1995. "Nature in old illustrations." In: Exhibition Catalogue: *Illustration in natural-history books.* Kazimierz Dolny (in Polish).

Czarniecki S., 1995. "Professor Marian Ksiazkiewiez and the Society of Worker's University." *Dziennik Polski*, Polish Daily, in USA.

Garbowska J., 1995. "Geological sciences in the University of Vilnius and the Lyceum of Krzemieniec in the years 1781-1832." *Organon* vol. 25, 85-106.

Garbowska J. and Jakubowski K., 1995. *Ignacy Domeyko, 1802-1889.* Warszawa-Lida, 67 pp. (in Polish and Byelorussian).

Gorczyca-Skala J.,1995. "Geological sciences at the Wroclaw University in the years 1811-1950." In: *Program of the 66th meeting of the Geological Society of Poland.* Wroclaw, 84-86.
Kleczkowski A. S., 1995. "Polish Bursch student's songs collection of the Academy of Mining in Kielce." *Literat. Lud.* No. 31 Wroclaw, 29-50 (in Polish)
Kleczkowski, A. S., 1995. "Zbigniew Wilk: academic teacher and mining geologist." *Wspolcz. Probl. Hyrogeol.* vol. 7, (1), Kraków-Krynica, 45-50 (in Polish).
Kleckzkowski A.S. 1995. "Hochschulen der k.k.Monarchie-Galizien, Polen, Krakow-Bergakademie." *Sonderausgabe - Föerderung der Berg u. Huettenakademie.* Wien 26.04-28.04.1995. 15-18 (in German).
Narebski W. 1995. "Sikora Waclaw Jozef, 1929-1981, Curriculum Vitae." *Polish Biographic Dictionary* vol. 37, in press.
Skoczylas J. 1995., "Karol Bohdanowicz, 1964-1947." *Polish Jour. Mineral Resources* vol. 2, 15-87 (in Polish, English summary).
Skoczylas J., 1995. "On the history of geological investigations in Greater Poland, before the Commission of National Education." *Bad. Fizjogr. Polska Zach.* vol. 44 ser. A, 81-91 (in Polish).
Skoczylas J., 1995. "Geology at the Poznan University: summaries of lectures delivered at the meetings of Poznan branch of the Geological Society of Poland." vol. 4, 18-24.
Skoczylas J., 1995. "Mining in the southern part of Greater Poland: a historical outline." *Kronika Wielkopolski* nr. 3 (74), 45-55 (in Polish).
Wójcik Z. and Kuczynski, A, Editors, 1995. *The diary of Jozef Kopec brigadier of the Polish forces.* Warsaw, 1995.

Memorial Notes

Witold Salamon, 1942-1995, by M. Banas and W. Mayer. *Miner. Polon.* 26 (2): 115-120.
Kazimierz Szpila, 1929-1995, by W. W. Kowalski and N. Bakun-Czubarow *Ibidem*: 121-126.
Stanislaw Weclawik, 1927-1994, by J. Dziewanski and J. Chrzastowski. *Ann. Soc. Geol. Polon.* 65 (1-4): 93:94.
Zofia Martini, 1922-1994, by S. Czarniecki. *Przegl. Geol.* 1995 (6): 529-530.

Wojciech Narebski, Zbigniew Wójcik

Professor Jósef Babicz of the Institute of the History of Science of the Polish Academy of Sciences in Warsaw has written that he now plans to change his research interests and will no longer be connected with the history of geology. He therefore feels that he should withdraw from membership in INHIGEO. The INHIGEO Board regrets the prospect of losing contact with Professor Babicz, who has been a member since 1980. At the same time, we appreciate his straightforward withdrawal if he no longer feels that he can serve the interests of INHIGEO as a working commission. We note with pleasure that several new members from Poland have been elected in recent years and so we hope that Polish participation will remain as strong as ever. We wish Professor Babicz the very best in his new endeavors.

Ursula Marvin

RUSSIA 1995

INHIGEO member Eugenji E. Milanovsky attended the "Volcanoes and History" Symposium in Italy where he presented two papers, one titled: *Main developments stages of volcanological researches in Russia*, and the other: *Problem of Atlantis in the light of geological and archaeological researches on the Santorini volcanic archipelago in the Ægean Sea.* In addition, he mounted an exhibit of the sketches and drawings he has made of volcanoes in many parts of the world.

SPAIN 1995

In 1995, Spain suffered the loss of Dr. Manuel López de Azcona, a founding member of INHIGEO. A Memorial Note for Dr. de Azcona will be found on Page 62.

A conference on *Mining and Technology in the Iberian Peninsular During the Middle Ages* was held in Leon 26-29 September. The contributions were published in the landmark 725-page book full of interesting and important papers (see page 44). Homage was paid to José Royo y Gómez (1895-1961) in the 100th anniversary year of his

birth. Royo y Gómez was a well-known Spanish naturalist with an intense interest in stratigraphy, who also was very active in politics during the 2nd Republic and the Civil War 1936-1939. In 1939 he exiled himself to Venezuela and Colombia where he carried on important scientific work. A cycle of public lectures was held in the Mining School of Madrid from March to May on the *History of Science and Technology*. Each week, INHIGEO members Drs. Ayala-Carcedo and Octavio Puche, introduced a new topic including, among other themes, *The History of Geology & Mining Worldwide*. A temporary exhibition of the Archaeological Heritage of Mining, organized by Dr. Octavio Puche in the Historical-Mining Museum of the Mining School of Madrid, was on display from December 1994 to February 1995.

The Spanish Society for Defense of the Geological and Mining Heritage (SEDPGGYM) was created at the end of year, in large part through the efforts of Drs. Puche and Ayala-Carcedo. The chief aims of SEDPGYM are the conservation and study of the Historical Heritage of Geology & Mining in Spain. The Society will publish a Bulletin. Those interested may request copies from Dr. Octavio Puche, Society Secretary, E.T.S. de Ingenieros de Minas de Madrid, Ríos Rosas, 21. 28003 Madrid. Fax: 34-1-336-70-68.

Main Anniversaries in 1995:

The 250th anniversary of the birth of Antonio Jose Cavanilles (1745-1804). Cavanilles was the leading Spanish naturalist of the 18th Century. With Celestino Mutis, he worked in botany, paleontology and physical geography.

The 200th anniversary of the publication of *"Elements of Oritognosia"* (Mineralogy) by Andrés Manuel del Río (1764-1849). Del Rio, a Spanish mining engineer and a professor in the Mining College of Mexico, the earliest engineering school in America still existing today, was the author of the "Oritognosia" of 1795, the first book published specifically on geology (mineralogy) in Spain and America. He discovered vanadium in 1800 (called by him "eritronio o pancromo"). A friend of Alexander von Humboldt, he lived most of his life in Mexico.

The 100th anniversary of the death of Manual Fernández de Castro (1825-1895). Fernández de Castro was one of the geological engineers of the Spanish Commission of the Geological Map, created in 1849. He reformed the Commission in 1873, during the 1st Republic, and was the Director until his death in 1895. In 1889 he finished the first systematic Geological Map of Spain, at a scale of 1/400,000. Along with the mining engineers, Maffei and Rúa, he initiated studies in the history of geology & mining in Spain.

Publications

Bentabol, Horacio (1900) *Las aguas de Espana y Portugal*. Facsimile editon, 1995, issued by the Instituto Tecnologico Geominero de Espana. Bentabol (1854-1928), was a geological engineer of the Spanish Commission of the Geological Map. His landmark book on groundwater remains interesting today.

Ayala-Carcedo, Francisco J. (1995) "El significado cientifico y tecnologico de Manuel Fernandez de Castro (1825-1895) cien anos despues." *Boletin Geologica y Minero*. Vol. 106-3, (93-99).

Gonzalez Munoz, Jose M^{a} (1995) "La Comision del Mapa Geologico en Avila (1877)." *Boletin de la Comision de la History de la Geologia*. Sociedad de Espana. No 3. Mayo.

Mazadiego, L.F. y Puche, O. (1995) "Mitos, genios duendes y supersticiones en las minas." *Boletin Geologico y Minero*, Vol. 106-5:489-500.

Puche, O. y Ayala-Carcedo, F.J. (1995) "La mineria y Metalurgia hispana en la epoca del Imperio." *Boletin Geologico y Minero*. Marzo-Abril.

Puche Riart, O. y Bosch Aparicio, J. (1995) "Apuntes sobre la mineria visigotica hispana." In *I Jornadas sobre Mineria y Tecnologia en la Edad Media Peninsular*. 20 pp. Leon 26-29 Septiembre.

Puche Riart, O. (1995) "La obra minera del Rey Sabio y las explotaciones de su tiempo." In *I Jornadas sobre Mineria y Tecnologia en la Edad Media Peninsular*. 7 pp. Lean 26-29 Septiembre.

Francisco J. Ayala-Carcedo

Publications by L. Sequeiros

Sequeiros, L. (1995) Recensión de C. Cohen. Le destin du Mammouth. *Llull*, 18(34), 342-343. *Not. Paleont.* N°25, p. 25.

Sequeiros, L. (1995) Aspectos didácticos de las Ciencias de la Tierra. *Master en educación secundaria* Universidad Carlos III, Madrid, 18 pp.

Sequeiros, L. (1995) editor, *Boletín de la Comisión de Historia de la Geología España*. Año 2, nos. 3 (24 pp) and 4 (16 pp). Sociedad Geología de España, 16 pp.

Sequeiros, L. (1995) *Tectónica de Placas y Evolutión Biológica. Construcción de un paradigma e implicationes didácticas*. Curso CEP de Castilleja, Sevilla. 12 pp.

Sequeiros, L. (1995) La Historia de la Ciencia en la formación de profesores de Ciencias de la Tierra: implicaciones para la Tectónica de Placas. V Simposio de historia de las Ciencias y Enseñanza de las Ciencias. Figo, Sept.

Sequeiros, L. (1995) *Recensión de WG. L. Randles (1990) De la tierra plana al globo terrestre. Fondo de cult Económica*. 120 pp. EnseñCITerra...Llull, Zaragoza, 35 (18)...

Sequeiros, L. (1995) *Recensión de Gómez de Mendoza y otros Geógrafos y Naturalistas en la España Contemporáea*. Llull, 35 (18).

Sequeiros, L. (1995) Recensión de Milner: Diccionario de la Evolución. *Enseñanza Cinencias de la Tierra...*Llull, Zaragoza, 35 (18).

Leandro Sequeiros

The Sociedad Geologica de España issued Year 2, Number 4 of its *Boletín de la Comision de Historia de la Geologia de España*. This is a very interesting and informative newsletter of activities in Spain relating to the history of geology. It reports in detail many of the events listed above plus a few additional ones. The *Boletin* also carries notices of future activities, book reviews, lists of publications, memorial notes. Our colleagues in Spain are very active, indeed. Information on obtaining copies of the *Boletin* may be addressed to the editor, Leandro Sequeiros, who recently changed his address to Pintor El Greco 8.5°m 14004 Córdoba. [UBM]

Dr. Luis Adaro, of Gijón, writes that he and his colleagues in Asturias are continuing to expand the Museum of Mining and Industry of Asturias (which was described in *INHIGEO Newsletter No. 27*, p. 31). Recently, the Mining College of Oviedo has donated a collection of fossils which will be displayed in one room of the Museum against a background of geological strata.

Conference on Mining and Technology in the Iberian Peninsula in the Middle Ages.

The papers presented at conference held in Léon, September 26-29, 1995, under the auspices of the Sociedad Espanôla de Estudios Medievales, are collected in *Actas de las I Jornadas Sobre Minería en la Edad Media Peninsular* a 725-page book issued by the Fundación Hullera Vasco-Leonesa ISBN 84-87920-07-1. In opening the conference, Professor Antonio del Valle Menéndez, an INHIGEO member from Madrid, reminded his audience of the *Breve Historia de la Ingeniería Española* written in 1950 by the eminent Professor Pedro de Novo y Fernández Chicarro in collobaration with Manuel Ortega Y Gasset. In it, the authors imagined an aerial reconnaissance over all the Peninsula and wrote: "We observed the entire country of Spain and what we saw was a view of the cities enriched by the miraculous products of the subsoil and by the noble work of the miners." Today, Valle Menéndez continued, if we made such a flight, not imaginary but real, what fields of desolation and ruin would we observe: a Spain in one of the most profound mining crises in our history. But it is difficult to imagine any activity that has contributed in so decisive a manner to forming the character of various territories and communities, as in the case of the Iberian peninsula, precisely because its roots go back for thousands of years. History teaches us that frequently, after a period of decadence comes another a resurgence of plenty, and I have not the least doubt that this will be the case with mining in Spain. Although, of course, the resurgence must be founded upon a new economic and technological basis.

In the case of the extractive and metallurgical activities of Spain, after the splendor of the Tartesican and Roman episodes, a profound regression occurred in the medieval centuries, only to flourish anew in the modern age. Certainly this recession wasn't as profound as traditionally has been thought. This book reveals the fundamental information needed to reconstruct the mining and metallurgical industry of medieval times drawing not only on the documentary sources but also making use of the insights provided by archaeology. Without doubt, scientific information, recorded here will provide surprises to a number of observers, but, concludes Valles Menéndez, I hope it will serve as a encouragement to probe deeply into the historic past of our noble mining activity.

This book offers a remarkably wide selection of topics covering every aspect of the history of mining in Spain and Portugal in the Middle Ages. The papers are grouped into three main subjects: Section I: Mines and Natural Resources. Section II: Changes in Techniques and Procedures. Section III: Legal, Economic and Social Aspects.

All articles focus on the history of mining in Spain, but many have relevance to other countries and more recent times. Anyone interested in the book's availability may make inquiries of Professor Menéndez . *UBM*

SWITZERLAND 1995

Jean-Pierre Portmann, at Fontaines, has completed his compilation, in French, of extended abstracts of all the works of Eugène Wegmann (1896-1982). Wegmann published articles in German, English, French, and Norwegian in very diverse periodicals, some of which are difficult of access. Portmann has placed the collected abstracts in the Bibliothéque Publique et Universitaire in Neuchâtel. He presented his typewritten materials to the Société Académique Neúchâtelois. Portmann also has finished the first part of a biography of Wegmann from the time of his birth and early life at Schaffhausen up to his nomination to a professorship at the University of Neuchâtel in 1947. This text is supplemented by 75 notes (filling seven pages) and several figures. He reports that circumstances prevent him from writing the second half of the biography, from the beginning of Wegmann's career at Neuchâtel to his death, so he has deposited all of his documents relating to that period of Wegmann's life in the "Archives des sciences neuchâteloises" in the Bibliothéque Publique et Universitaire. Portmann hopes that others may be interested in writing about that period. In addition, Portmann has deposited in the same library all of the biographical materials he has written on Lauge Koch, Chief of the Danish Expeditions to Greenland, and J. J. Sederholm, Director of the Geological Service of Finland and spiritual father of Eugène Wegmann.

Portmann remarks on the many valuable contributions in the memoir, *Essais sur l'Histoire de la géologie. Hommage à Eugène Wegmann*, edited by Professor François Ellenberger and Jean Gaudant and published in 1995 by the Société Géologique de France. (See Book Review p. 57.)

We are glad to receive word that Professor Portmann maintains his interest in the history of geology and wishes to remain a member of INHIGEO for one more term, although he declares that it will be his final one.

Ursula Marvin

THE NETHERLANDS 1995

The following is the 1995 report of the Commission for the History of Earth Sciences of the Royal Netherlands Academy of Arts and Sciences:

In order to conform with its broader field of interest, the Academy authorized the Commission to change its name from Geological Sciences to Earth Sciences, and to initiate a reconstitution of its membership. So far two members have resigned (G.J.J. Aleva and F.H.G. Engelen), and two new members were appointed (Dr. R.P.W. Visser and Professor N. A. Rupke, both well-known historians of biology and geology).

In 1995 the Commission met three times. On the 9th of June, E. W. A. Henssen's book '*Uit de Geschiedenis der Nederlandse Geologische Wetenschappen*' was presented to Dr. H. J. Sypkes Smit, a noted senior historian of medicine and biology. Three members of the Commission delivered a lecture to the 13th Benelux Conference on '*Mens en Aarde*' held at Echternach, in Luxemburg, from October 5-8th. Written versions of the lectures will be published in a multilingual volume of its proceedings, to be issued by the Luxemburg Ministry of Education in the spring of 1996. During the 'Wetenschaps-historische Dag', held on the 25th of November in the Museum of Natural Science and Medicine (Boerhaave Museum) at Leiden, the Commission presented a summary of its aims and achievements to the community of historians of science in the Netherlands and Flanders. On one of the last days of 1995 F. R. van Veen's biographical study of the outstanding Dutch geologist Dr. W. A. J. M. van Waterschoot van der Gracht (1873-1943) was published by the Delft University Press.

The manuscript of the multi-authored book *History of Earth Sciences in Suriname* is nearing completion. It will be published by the Rijks Geologische Dienst at Haarlem as a special issue of its *Mededelingen*, hopefully in 1996.

The following two papers on the history of geology were submitted for publication:

Tex, Emile den (1995) "Clinchers of the basalt controversy. Empirical and experimental evidence." (to *Earth Sciences History*.

Tex, Emile den (1995) "A prelude to modern volcanology in Western Europe. With emphasis on the Republic of the United Netherlands (~1600-1800)." (To the *Proceedings of the 13th Benelux Conference on the History of Science*, Echternach, October, 1995.) A book manuscript on the latter subject was nearing completion for publication in 1997.

Emile den Tex

UNITED KINGDOM 1995

This year the main interest in the UK has been in the work of the History of Geology Group (HOGG) of the Geological Society of London. This has been a great stimulus to work in our field and by January 1996 had produced its third Newsletter. The Chairman is John Thackray, Archivist, Natural History Museum, Cromwell Road, London, SW7 5BD, UK.

HOGG met twice in 1995. "Waterhouse Hawkins and the Crystal Palace Dinosaurs" was the title of a one day meeting on 12 May 1995, which consisted of a morning of papers at the Natural History Museum, accompanied by an exhibition of items from the Waterhouse Hawkins Collections. After lunch the group traveled to Sydenham, the site of the Crystal Palace, and were guided around the remains of the surviving Victorian Dino-Park there by Steve McCarthy and Peter Doyle. The second meeting of the year was held at the Department of Earth Sciences, Oxford on 4 October on the theme of the history of Earth Science mapping. Papers were given by Denise Crook, Norman Butcher, Richard Howarth and John Fuller. A display of items from the William Smith collection was provided by Stella Brecknell.

Hugh Torrens

Communications from U. K. INHIGEO Members

Hugh Torrens attended the INHIGEO Symposium in Italy, *Volcanoes and History,* and presented a paper on Charles Daubeny (1795-1867) F.R.S. and his work on volcanoes. Torrens published the following papers:

Torrens, H. S. (with Jean John and Eric Robinson) (1995) "The Correspondence between James Hutton (1726-1797) and James Watt (1736-1819) with Two Letters from Hutton to George Clerk-Maxwell (1715-1784): Part II." *Annals of Science*, 52, 357-382, 1995. (ISSN 0003-3790).

Torrens, H. S. (1995) (Book Review) "A neglected 'Mecca' for Historians of Science. Review of Marco Beretta A History of Non-Printed Science: a selected catalogue of the Waller Collection. Uppsala 1993." *Notes and Records of the Royal Society of London*, 49, 333-4, 1995, (ISSN 0035-9149).

Torrens, H. S. (1994) "J. H. Fryer (1777-1855): An English Mining Engineer and Geologist in South America 1826-1828." in Lopes M. M. and Figueirôa S. F. (editors), *Geological Sciences in Latin America: Scientific Relations and Exchanges*. Campinas (Brazil), 1994. (ISBN 85-85369-06-X).

Torrens, H. S. (1995) "Presidential Address. Mary Anning (1799-1847) of Lyme: 'the greatest fossilist the world ever knew.'" *British Journal for the History of Science*. 28, 257-284, 1995 (ISSN 0007-0874).

Torrens, H. S. (1995) (Abstract). "Charles Daubeny (1795-1867) F.R.S. and his work on Volcanoes." Paper presented to *Volcanoes and History* the XXth INHIGEO Symposium, in Naples. September 1995. Abstracts volume p. 68.

Torrens, H. S. (with M. A. Taylor) (1995) "Fossils by the Sea and the Sea Monsters of Dorset." *Natural History*, 104, no 10, 66-71, October 1995 (ISSN 0028-0712).

John Cooper has been working mainly on Gideon Mantell (1790-1852). He organized Mantell's bicentennary symposium in 1990 and since then has been committing to his computer those parts of Mantell's Journal which were not published by Cecil Curwen in 1940. Cooper completed this considerable undertaking in 1995 and now has around 67,000 words on disk, compared to the 85,000 already published. Historians of geology always have had great difficulty consulting the unpublished portions of Mantell's Journal, which contain a wealth of detail. Cooper now is consulting with publishers and hoping that his contribution can be issued in 1996.

Cooper also organized the first joint meeting between the Society for the History of Natural History, of which he is a councilor, and the new History of Geology Group of the Geological Society. The meeting took place on February 16, 1996 at Burlington House, London, on the theme "Geological Collectors and Collecting."

Trevor Ford has published a further note on White Watson, a late 18th- early 19th-century Derbyshire geologist, and the two other works listed below. He also has published a few other works with a small historical input, e.g. guide books to Charnwood Forest (Precambrian of Leiscestershire) and Castleton and Wirksworth, both in Derbyshire. After 30 years in the post, he still is editor of the *Bulletin of the Peak District Mines Historical Society*. He remarks that in spite of its apparently parochial title it is, in effect, Britain's leading journal of historical research on mining, with a content of international material.

Ford, T. D. & Willies, L. M. (editors) (February 1995). "Mining Before Powder." *Bulletin Peak District Mines Historical Society*, 12, (3), 149 pp. (also issued as a Special Publication of the Historical Metallurgy Society).

Ford, T. D. (February 1995). "15th-century mining: the Kuttenberger Kanzionale." p. 81-83 in "Mining Before Powder," *Bulletin Peak District Mines Historical Society*, **12**, (3):81-82.

Ford, T. D. (March 1995). "White Watson (1760-1835) and his Geological Tablets." *Mercian Geologist*, **13,**(4):157-168.

John Fuller reports that his only offering for 1995 was an explanatory booklet to accompany a new printing, in the form of a poster, with five plates of cross sections by William Smith, first issued in 1819. The booklet, of nine pages, carries the title: "'Strata Smith' and his Statigraphic Cross Sections, 1819." The poster and booklet were published jointly by the American Association of Petroleum Geologists, Tulsa, and the Geological Society of London.

The History of Geology Group in the Geological Society hopes soon to mount a small conference on the History of Applied Geology, something to recall the Wisdom of the Ancients. He has worked on a theme: "Statigraphy in England, 1533 to 1796" which is due for early presentation. Also, a suite of 18 posters tracing 250 years of subsurface exploration, 1549-1799, will be displayed at the Geological Society's first Biennial Conference in April, 1996.

Andrew Grout recently was awarded his Ph.D. by the School of Oriental and African Studies of London University for a thesis: *Geology and India, 1770-1815: a study in the methods and motivations of a colonial science.* He also recently published the following essay:

Grout, A. "Possessing the earth: geological collections, information and education in India, 1800-1850," in Crook (ed) *The transmission of knowledge in South Asia: essays on education, religion, history and politics,* Oxford University Press, Delhi, 1996.

Beryl Hamilton attended the INHIGEO Symposium on *Volcanoes and History* in Italy and presented a paper on John Judd, whom she ranks as one of the most worthy of British 19th-century geologists. Early in his career Judd decided to specialize in the study of volcanoes and volcanic rocks, in the course of which he clashed with the geological establishment in the person of Sir Archibald Geike. The two men published a long series of opposing papers on interpretations of the rocks and volcanic history of the Inner Hebrides of Scotland. Judd studied volcanism on a global basis and was appointed by the Royal Society of London to collate geological information on the eruption of Krakatoa in 1888. His comprehensive collected works were a valuable contribution to the development of igneous geology in Britain.

Hamilton, Beryl M. (1995) "The impact of Lapworth's early work on the palaeontology and stratigraphy of the nineteenth century." In *Rocks Fossils and History.* Proceedings of the XIIIth International INHIGEO Symposium, Pisa-Padova, Italy, Edizioni Festina Lente, Firenze, ISBN 88 85171 23 0, p. 173-180.

John Thackray assumed the chairmanship of HOGG and published two important catalogues containing items of interest to historians of geology:

Thackray, John C. (1995) *A Catalogue of Portraits, Painting and Sculpture at The Natural History Museum* ISBN 0-7201-2289-9.
Thackray, John C. (1995) *A Catalogue of Manuscripts and Drawings in the General Library of The Natural History Museum* ISBN 0-7201-2291-0.

Presentation of the Sue Tyler Friedman Medal of the Geological Society of London to Homer E. Le Grand

Citation. Dr. Le Grand gained BA degrees in both History and Chemistry in 1966 from the University of North Carolina and was thus uniquely qualified to follow a career in the History of Science, and this commenced with a PhD gained at the University of Wisconsin in 1971 in the History of Science. This was followed by a brief spell as an Assistant Professor in the Department of History at Virginia Polytechnic Institute and State University. In 1975 he became a Lecturer in the History and Philosophy of Science Department at the University of Melbourne, where he has remained. He was appointed Head of the Department in 1990 and is currently Dean of the Faculty of Arts.

His early work, quite naturally given his early training, was chemical in content but during the last decade he has made a major contribution to an historical study of the Earth Sciences revolution caused by the general acceptance of plate tectonic theory. Undoubtedly, his scientific training has led to a remarkable grasp of geological and geophysical concepts, and his training as an historian has added the element of historical rigor to his work. His major book *Drifting Continents and Shifting Theories* is a significant advance in the field and was published in 1988. He has also developed an interest in the history of paleomagnetic research, particularly polar wandering, in relation to Continental Drift. More recently, he has turned his attention to the concept of displaced terranes, the first historian of science to do so. This involves a study of the evolution of the networks of scientists, equipment, techniques, theories and problems in various specialties of the earth sciences.

In recognition of his services to the history of science he is a member of the Australian Academy of Sciences National Committee for the History and Philosophy of Science, a member of the History Committee of the American Geophysical Union, and a member of the Advisory Board of the Australian Science Archives Project.

Dr. Le Grand, this award was given last year to a fellow Australian Historian, Professor Oldroyd, and I am sure that you are pleased to continue the Australian lineage by accepting the Sue Tyler Friedman Medal for 1995.

Response. Mr. President, Fellows, and guests of the Society, I am delighted and honored to accept the 1995 Sue Tyler Friedman Medal.

I am delighted and honored for three main reasons. First, you are professional geologists. I am not -- no surprise, I might add, to those of you with whom I have worked. Nonetheless, ever since I first became fascinated with the development of the earth sciences in the 20th century, I have tried to write for and speak to geologists. To have my efforts recognized by professional geologists is therefore especially meaningful to me -- and gives me some reassurance that the many gaps in my general knowledge are not too obvious.

Second, you are not just geologists, but Fellows of the Geological Society. As a historian, I am of course mindful that your Society is the oldest and most illustrious society in the field and that history has been made by you and your predecessors in this very place. This added immeasurably to my delight in accepting this award.

Third, when I was first notified of this award, I looked up the names of previous recipients. It is with no false modesty that I say that three of them -- Steve Gould, Martin Rudwick, and David Oldroyd -- have each in their own way been an exemplar and a source of inspiration to me as a newcomer to this field. I am indeed flattered to be placed in their company.

I close by expressing my deep appreciation not just to you but also to the many other earth scientists who have made my studies both possible and immensely enjoyable: as informants, as friendly but astute critics, and as readers.

The Dynamic Earth Project, Edinburgh

Work began in 1995 on the transformation of the Old Town of Edinburgh, in the vicinity of the historic Palace of Holyroodhouse, by construction of the William Younger Centre to house the £34 million Dynamic Earth project, a permanent exhibition that will trace the story of the universe from the 'big bang' through the formation of Planet Earth to the present day. Lying at the base of Arthur's Seat, the site once attracted a ring of breweries that drew water from the high-quality aquifer at the contact between the sandstones and the volcanic intrusions. When the last brewery was abandoned in 1986, a foundation was established to support a project worthy of the magnificent location. The Dynamic Earth was chosen as a theme appropriate to the site, the city, and to Scotland itself--largely because James Hutton--widely regarded as the founder of modern geology--was born and educated n Edinburgh, but also because Scotland, with its early Paleozoic rocks, fault-line sutures, Tertiary volcanics, glaciated terraines, and extensive wilderness is a living geological laboratory. Hutton returned to Edinburgh in 1767 to devote his life to business, scholarship, and his wide circle of friends who included many great figures of the Scottish Enlightenment. Hutton built a house on St. John's Hill, close to the site of the Dynamic Earth Project, where he wrote all of his scientific works.

In the Centre itself, the first of twelve exhibition areas will present "The Present State of the Earth," where advanced technology will allow a visitor to see at a glance what is happening to the physical environment--the weather, the vegetation, events such as landslides or earthquakes--at any place any time the world over. Historical geology will form the core of the next three sections. The first will develop Hutton's great contribution in expanding the concept of time, and take critical moments in the Earth's history, from the creation and evolution of the physical world, as an introduction the four major processes--geophysical, atmospheric, hydrological and biological--which currently shape the face of the planet. Here the present will be explained by reference to the past.

Plate tectonics, as a comprehensive model of the Earth's internal workings, will occupy the next section with demonstrations of the dynamics of earthquakes, volcanism and continental drift. Arthur Holmes, at Edinburgh, will be featured as one of the few leading geologists who, at an early date, took seriously Alfred Wegener's concept of continental drift. Holmes published a version of his own in the 1920s, postulating mantle convection as the causal mechanism, and introduced his ideas to a wide readership in his *Principles of Physical Geology* published in 1944. Edinburgh will be used as a key site in demonstrating that Scotland and England once were located on different continental plates; their suture makes the boundary between the two countries physical as well as cultural. Examples of remarkable scenery in other parts of the world also will be explained in terms of plate tectonics.

The next section will consider the changing geography of the Earth, due to plate motion, which leads, in turn, to climate changes and glaciation. A focus on present landscapes will lead into the first of the free-flow areas in the exhibition, the gallery of life where the emphasis will be on casualties and survivors. The link between the evolution of the Earth and life through time will consider the many mass extinction events that have occurred throughout the geologic past, and lead to the critical question of Man's survival. Biological processes have been, and remain, responsible for many of the dynamic features of the Earth; but now Man, in his own right, has become a major processor, for better or for worse, in shaping the Earth.

Sections featuring four major environments--the oceans, the polar regions, the grasslands and the equatorial zone--will show how the various physical and chemical processes interact, and the complexities engendered when they operate together. Man's role in changing the face of the Earth will receive increasing attention in these presentations.

Subsequent areas treat topics such as: Beginnings (the "big bang"), Physical Creation and Moving Continents, Glaciation and Climatic Changes, a Gallery of Life, the Human Animal, The Oceans, Polar and Mountain regions, The Grass Lands, Tropical regions, a Showdome where physical processes that create hazards will be depicted, and, finally, Dynascope, in which the latest interactive technology will make the Dynamic Earth globally renowned as an educational resource and internationally accessible. Students of all ages from different countries will be able to directly connect with a world of images and information about planet Earth. The Centre will include function rooms, an auditorium and other facilities in anticipation of up to 500,000 visitors a year. On adjacent properties, where breweries have been wholly or partially demolished, individual developers will provide student flats, residential

accommodations, a hotel, a small local supermarket, a public house, small workshops, offices, and shops, while restoring some relic Medieval structures and alleyways.

From The Dynamic Earth brochure and
Earth Heritage Magazine, January, 1995.

INHIGEO Past-President Gordon Craig is a Trustee of the Dynamic Earth Charitable Trust. He writes that construction of the Dynamic Earth is scheduled to begin in 1997 and will give added excitement to the Bicentennial meeting.

The James Hutton Plaque Fund: As part of the Bicentennary celebrations in 1997, it is proposed to erect and unveil a plaque to James Hutton (1726-1797) on the site of the house on St. John's Hill in Edinburgh, Scotland, where he wrote the *Theory of the Earth* and all his other works. Negotiations are underway with the local authority. A special fund to defray the cost has been established by the Edinburgh Geological Society, and donations for this are invited. Checks, made payable to the Edinburgh Geological Society, should be sent to the Hon. Treasurer, Dr. David Gould, at the British Geological Survey, Murchison House, West Mains Road, Edinburgh EH9 3LA, Scotland.

THE UNITED STATES OF AMERICA 1995

USA participants at the INHIGEO Symposium "Volcanoes and History," Italy, 1995

Nine Americans submitted abstracts for this meeting on a wide range of topics relating to volcanism. The speakers and their titles were as follows: Barbara May Christi, with Paul D. Lowman, Jr., *Maps of global volcanism: two examples from two centuries,* (the maps dated to 1848-1854 and 1980, 1995). Dennis Dean, *Charles Lyell and Italian Volcanoes*; Robert H. Dott, Jr., *Recognition of the Tectonic Significance of Volcanism in ancient Orogenic Belts*; Ursula Marvin, *The eruption of Mt. Vesuvius and the meteorite fall at Siena, 1794 (*they occurred 18 hours apart and confused meteorite falls with volcanism for nearly a century); Sally Newcomb, *Early volcanology and the laboratory*; Kenneth L. Taylor, *The domestication of volcanoes in the 18th century: early volcanolory and the place of volcanoes in the economy of nature*; Leonard G. Wilson, *The critical role of Italian geology in the thought of Charles Lyell*, and Hatten S. Yoder, Jr. *Italian volcanology: geophysical laboratory contributions, 1905-1965.*
We note with pleasure that INHIGEO member Alex Ostpovat also attended the symposium.

The Origins of Mineralogy: The Age of Agricola, by Cecil J. Schneer, a former Vice-President of INHIGEO, was published in the *European Journal of Mineralogy* **7**:721-734, 1995. It was the text of an invited keynote address he had delivered at the meeting of the International Mineralogical Association at Pisa, Italy, in September, 1994.

The History of Geology Division, Geological Society of America

The James Hutton Forum: *Celebrating the Founding of Modern Geology on the 200th Anniversary of James Hutton's "Theory of the Earth"* occupied Sunday afternoon, November 5th, the opening day of the GSA meeting in New Orleans. The Hutton Forum was convened by William B. Brice and Robert N. Ginsburg to address the following questions:

Who was James Hutton?
Was he truly the "Founder of Modern Geology?
How did he revolutionize the way we look at the Earth?
In what context did he work?
What were the ideas presented by his writings, especially in his 1795 *Theory of the Earth?*
Does Hutton really deserve so much credit and acclaim?

The following speakers addressed these issues:
Hugh S. Torrens: James Hutton (1726-1797): *His Life and Contributions to Geology.*
Dennis Dean: *James Hutton's "Theory of the Earth."*

Gerald M. Friedman: *Historical Notations on Hutton's 1785 Abstract.*
Arthur L. Bloom: *What would Hutton Think?*
Robert H. Dott, Jr.: *The Empirical Side of James Hutton.*

Refreshments (although probably not the delicacies served by the Edinburgh Oyster Club two centuries ago), and souvenirs were promised and appreciated by all.

The Division Symposium: *The Dana Legacy, a Century Later, Parts I and II,* organized and presided over by Robert N. Ginsburg and Ellis Yochelson, occupied morning and afternoon sessions on November 7th. Nine 25-minute talks were given, each of which was followed by ten-minutes of commentary by a designated speaker. Open discussion followed the final commentary of the afternoon.

The Dana Symposium Part I.

David R. Stoddart: *Dana's Achievement, Darwin's Dilemma: Denudation and the Development of Landforms in the Pacific in the 1830s.* Commentary by Arthur L. Bloom.
Joshua I. Tracey, Jr.: *James Dwight Dana: Coral, Coral Reefs, and the Ocean Floor.* Commentary by Ann F. Budd.
Brian Mason: *Dana's Contribution to Mineralogy.* Commentary by Dan Appleman.
James H. Natland: *Beginnings of Planetary Volcanology in the Explorations of James Dwight Dana.* Commentary by James E. Luhr.
John Rodgers: *James D. Dana and the Taconic Controversy.* Commentary by Bill Kidd.

The Dana symposium Part II

R. H. Dott, Jr.: *Dana's Old Tectonics: Global Contraction under Divine Direction.* Commentary and open discussion.
Julie R. Newell: *Dana and the Emergence of Professional geology in the United States.* Commentary by Michele Aldrich.
Charles W. Byers: *Dana's Manual of Geology. A "Perfect System Under Law."* Commentary by Brian Skinner.
Stephen Jay Gould: *Dana's Minimal Accomodation to Darwinism.* Commentary by Steven Stanley.

A lively discussion on the day's topics ended the afternoon session.

A "Poster" Demonstration was given by Dean A. Dunn and Theodore Feldman on: *"GeoClio: Computer Bulletin Board and World-Wide Web Site for the Study of the History of the Geosciences."*

Volunteered Papers

The following six volunteered on the History of Geology were presented on November 6th in a session chaired by Sarah E. Newcomb, Alan E. Leviton, and Naomi Oreskes.

Robert N. Ginsberg and William R. Brice: *Introduction: History of Geology Divitsion; Past, Present and Future.*
Kennard B. Bork: *A Franco-American Episode in the Maturation of Geology: the Exchange Between Alexandre Brongniart and Parker Cleaveland in the Early Nineteenth Century.*
Leonard P. Alberstadt: T*he Rise of Medical Education and the Decline of Geology - Vanderbilt University - A Case Study? (1875-1995).*
Patricia L. Daniel: *The History of Sigma Gamma Epsilon Honor Society for Earth Scientists.*
Wlliam M. Jordan: *An American Entrepreneur: Albert C. Koch's Exhibition of Fossil Vertebrates.*
Volker W. Gobel and Helga Stein: *Ferdinand Roemer in North America (1845-1847): Travels of the Father of the Geology of Texas and Scientific Achievements.*

Presentation of the History of Geology Award to Robert H. Dott Jr.

Citation: Joanne Bourgeois: Bob Dott has a long and distinguished career both in the geological sciences and in history of the geological sciences, and has earned respect and admiration in both geology and history of science communities. A short summary of his contributions in history of geology includes:

- Significant scholarly research in history of geology, including two edited books, some 20 journal articles, and numerous book reviews and editorials
- Outstanding contributions to teaching history of geology, both as a separate subject and within geology courses, particularly through his pioneering and influential text, *Evolution of the Earth*
- Thoughtful perspectives on the history of science, and on its place in geological and general science education
- Important service to various history of geology organizations

Bob Dott is the son of an eminent geologist (Robert H. Dott, Sr.), and academic offspring of a renowned stratigrapher, Marshall Kay of Columbia University. Raised in Oklahoma, Bob graduated from the University of Michigan, where he met and married Nancy Robertson, beginning a strong partnership and a large, scholarly family. The Dotts have also become extended family to many geology graduate students, including a number who are active in history of geology.

Receiving his PhD. in 1955, and after a brief stint in the petroleum industry, Bob began his academic career in 1958 at the University of Wisconsin as a sedimentary geologist. In the mid-1960s he revived the "History of Geological Thought" course taught before him by Stanley A. Tyler. He also began research in the history of geology, publishing his first paper in the field, on James Hutton, in 1969. He has maintained strong ties with the history of science faculty at Wisconsin, in particular with Robert Siegfried, with whom he has published work on Humphrey Davy.

Bob's research in history of geology has focused on mountain building and on late 19th-century American geology. He has called attention to unique contributions from the American geological community, and to the influence of these ideas in Europe. Several of his papers treat the history of geosynclinal theory in America, as well as other aspects of the history of tectonics, of cratonic studies, and of eustasy. This latter interest led him to organize the highly successful 1990 GSA History of Geology symposium, "The Ups and Down of Eustasy," the papers from which have been collected in a GSA Special Paper. Throughout this work, Bob has exemplified a non-Whiggish internal historian, bringing critical insight to bear on histories of geological investigations.

Probably Bob's most far-reaching contribution to history of geology is through his undergraduate Earth history text, *Evolution of the Earth*, published in five editions since 1971 (coauthored with Roger Batten, and most recently with Donald Prothero). Having myself experienced the prior generation of historical geology texts, I'm not sure those of you who didn't can understand what a breath of fresh air this text was. It replaced the "roll call of the ages" approach (a Larry Sloss term) with a conceptual approach, addressing the question, "How do we know?" rather than "What do we know?" The text is replete with examples from the history of geology, including original quotes, illustrations, poems, and cartoons--rather than just portraits of the giants of geology."

Bob's philosophy of education, also reflected in articles and editorials over the years, is well expressed in the preface to the first edition:

Our experience indicates that students are stimulated greatly by...exposure to scientific controversies, occasional spicy personal feuds or an amusing faux pas. The student also needs to became a partner in the endless process of hypothesis testing....

The historic elaboration of the development of basic principles for interpreting earth history...provides a proxy for the reader's actually recapitulating discoveries and interpretations accomplished by past generations that make up the fabric of geologic principles. Secondly, it helps to make clear that...science is a human activity, and that the quest for the understanding of nature is an on-going...process in which the reader...could participate. Finally, the historical approach reveals the cultural relationships of the science, which are unusually rich in the case of geology.

As a scientist, historian, scholar, and educator, Bob Dott is a worthy recipient of the 1995 GSA History of Geology Division Award. As one of the many students he has mentored, I take great personal pleasure in participating in the presentation of this award to Robert H. Dott, Jr.

Response by Robert H. Dott, Jr.: In anticipation of this honor, I asked myself, How did I get here? Not surprisingly, my parents had a lot to do with it, for both were very interested in history. One of my father's off-handed remarks when I was about to graduate from college made a lasting impression. He doubted that a person could fully understand his/her chosen profession unless they knew its history. A decade later, I left industry for academia largely because of a thirst for greater intellectual diversity, a trait also inherited from parents and my childhood in the university setting of Norman, Oklahoma. When I settled at Wisconsin, I had among many books from my father's library Von Zittel's History, Geikie's Founders, Merrill's encyclopedia of early American geologists, Fairchild's first 40 years of the GSA, and Clarke's biography of James Hall. To this list I had added, while a graduate student, Lyell's Principles, the Fentons' *Giants of Geology* and DuToit's delightful *Our Wandering Continents*. So when science historian Robert Siegfried came to my office on a proselytizing mission a few years later, I was ripe for his suggestion that I revive an old course on the history of geology. My subsequent associations with the faculty and students of the Wisconsin History of Science Department have been very rewarding and have helped me avoid that introversion by hyperspecialization which is in danger of overwhelming academia today and which I have fought against throughout my career. What a pleasure it has been to have a few geology students like Jody Bourgeois and Bill Jordan, as well as outside students, who share my interest in the history of geology. The outsiders have included Dennis Dean, Julie Newell, Beau Van Riper, and Susan Schultz, among others. I thank them all for their stimulation, as I thank the Division for the honor it has given me. It is particularly nice to receive this award from my longtime friend and colleague, Bob Ginsburg.

Five years ago, I had the pleasure of presenting the same award to Gordon Craig, James Hutton Professor of Geology of the University of Edinburgh. In his witty response, Gordon presented ME with a copy of handwritten notes by Charles Lyell for a "Lecture No. 9 for Philadelphia, March, 1842." My curiosity was piqued because Lyell's published New York lectures numbered only 8. What did this "extra" lecture mean? When a blizzard closed my university unexpectedly a few month later, I decided to transcribe the notes just for fun. With help from other cryptographers, I soon had a fair copy containing such interesting items as quotations from John Milton's *Paradise Lost*. And so I convinced myself that this "unknown" lecture might deserve publication. But I faced the problem of schizia shared by many members of the Division--it is very difficult to fit an historical hobby into a full geology teaching program. And so the project languished.

Then in 1994, I retired from teaching in order both to have more time for history and to create an opening for a young, aspiring scholar in the present, dreadfully restricted academic market. I decided to take as my first retirement project the completion of the Lyell study. During his first visit to America in 1841-42, Lyell had lectured three times--at Boston, Philadelphia, and New York. The New York lectures had been published immediately, so I decided I should find out something about the Boston and Philadelphia offerings. At the 1994 San Diego Penrose Conference on the history of geology, I had met Earle Spamer of the Academy of Natural Sciences in Philadelphia, and I asked if he might give me some leads. He soon E-mailed that there was both good news and bad news. The good news was that he had found two newspaper accounts, but the bad news was that there had been 12 rather 9 lectures! Meanwhile, my own search of 1841 Boston papers soon confirmed that there had also been 12 lectures in Bean Town. The supposed importance of the notes for lecture No. 9 suddenly seemed to evaporate!

I tell this story on myself in order to draw two morals. Number 1 is do your homework thoroughly before rushing to speak or write. As Michelle Aldrich admonished when she received the Division's award 3 years ago, we internalists must do our historical scholarship as thoroughly as we would our scientific research.

I was on the verge of abandoning my Lyell project with the satisfaction that, at least, it had provided fun and further experience in reading poor microfilms, an art to which I had been introduced in the 1970s by my historian friend Robert Siegfried, when we collaborated in the editing of Humphrey Davy's geology lectures. Moreover, I had vowed 30 years ago never to get involved in either the Lyell or Darwin industries because I felt that, relatively speaking, those two were over-studied in contrast to many other important geologists--the foot soldiers, so to speak. During a winter visit to Minneapolis, however, historian Leonard Wilson, a leading Lyell scholar, urged me to expand my investigation to encompass all of Lyell's three American lecture series given between 1841 and 1852. Accordingly, I took advantage of Leonard's generosity in making available his extensive Lyell archive, and I resumed reading microfilms. Historian Robert Silliman of Emory University, who has been working on Lyell's interactions with American geologists, also provided encouragement and valuable feedback. Consequently, thanks to such fine cooperation from historians, I expect to have a much different manuscript covering all of the lectures and travels in

America in time for the Hutton-Lyell Bicentenary in 1997.

And now for moral number 2. I present this confession in order to reemphasize a point I made in an editorial a few years ago about the problem of "two separate cultures" in the study of the history of geology. The second moral is that internalist geologists and externalist historians need each other. The trained historian brings a perspective richer than most scientists possess of the broader historical contexts of science as well as a keener sense of historical research techniques and standards of historical scholarship. The historian can help us avoid the common fallacies of hero glorification and the writing of Whig or presentist history in which ideas seem to have evolved smoothly and inevitably to a present, revealed "truth." Conversely, the practicing scientist should possess a deeper insight into nuances between the past and present practices of a science, which are like land mines for the unwary. For example, old terminology still in use generally takes on subtly different meanings as a science matures, and one who is naive about those differences can make serious errors. Obvious examples include the nineteenth century versus present meaning of "Silurian," application of the term "facies" to metamorphic as well as sedimentary rocks, the modern versus earlier meanings of "grauwacken," and the difference between Ampferer's meaning when he coined the term "zone de subduction" and our present usage of that term. Perhaps less obvious are the potential pitfalls of comparing geologic maps of the same area but of different vintage without a full appreciation of subtle changes that had occurred in the interim both of cartographic conventions and the even more subtle fashions of geologic mapping of structure and stratigraphy. Much more serious, however, is a trend in the history of science profession to leave out the science and to focus entirely upon the social, political, and philosophical relationships of the scientists. Does this mean that only we internalists will be doing the science history in another decade or so?

It is regrettable--if inescapable--that our two clans are centered in such different academic settings with widely differing customs for publication and professional meetings. All of this creates formidable barriers to communication, which I admonish everyone to try to surmount. The healthy mix that we have in our History of Geology Division as well as in the recent Penrose Conference and the INHIGEO symposia every few years certainly helps to ameliorate the separation of cultures, but each of us could do more. You may not be so fortunate as I am to have access to a department of the "other type," populated by congenial colleagues, but at least you could start by taking your "cousins" to lunch more than once a year at the GSA meeting.

The U. S. National Committee for the History of Geology (USHIGEO)

In 1995, USHIGEO helped bring to fruition the following two major projects:

The Rock Star Project: Publication in *GSA TODAY* of four short essays on distinguished geologists for the delight and edification of our colleagues, with the expectation that they will be used in schools and universities to attract young people into our science. Essays already published include *Formative Years of the Scientific Career of T. Wayland Vaughan (1870-1952)* by Robert Ginsburg (Nov. 1995) *and From Farmer-Laborer to Famous Leader: Charles D. Walcott (1850-1927)*" by Ellis Yochelson (Jan. 1996); forthcoming in 1996 are essays on Kirtley Mather by Kennard Bork and Darwin-the-Geologist by Léo Laporte. Other essays are being solicited with the expectation that this can be a regular feature in *GSA TODAY*. This project was initiated several years ago by USHIGEO upon the suggestion of Robert Ginsburg.

The GeoClio Home Page: At the March, 1994, Penrose Conference on Interdisciplinary Perspectives on the History of Earth Sciences it was unanimously recommended that there be an electronic means for historians of the earth sciences to meet in cyberspace to share information on meetings, publications, archives, and research queries. Subsequently, Professors Dean Dunn and Ted Feldman of the University of Southern Mississippi, received NSF support for hardware and technical assistance to set up a World Wide Web home page, which is now up and running **(http://www.geoclio.st.usm.edu).** This project grew out of earlier discussions within USHIGEO several years ago regarding the establishment of a National Center for the History of Geology. We invite all historians of geology with access to the Web to become regular participants in the home page.

Léo F. Laporte, Chair, USHIGEO

The American Geophysical Union History of Geophysics Committee

This Committee is living up to its stated purposes of building interdisciplinary interaction and educating AGU members and others about the nature and importance of the problems and issues in the history of geophysics. It held history of geophysics sessions in both its spring and fall meetings, and through its list server it carries on a lively interchange with GeoClio. Historians of the earth sciences can reach the Committee via E-mail at: **C@. kosmos.agu.org.**

VENEZUELA 1994-1995

Activities in the history of geological sciences have continued through the efforts of the "Sociedad Venezolana de Historia de las Geociencias" with the publication of seven issues of our *Bulletin*. The subject matter is covered in the following list of the main topics (in English):

- J. Gustav Klemn and his work "Mining in Venezuela," 1859. (An analysis of the work done by a German mining engineer).
- History of the unified exploitation of hydrocarbons in Venezuela.
- In Memoriam: Dr. Herbert Patz.
- Xavier Picard (1940-1980): his life and contribution to the geology of Venezuela. (His works were mainly in marine geology).
- Importance of the first mineralogical meeting of Venezuela, 1938.
- Biography of Dr. Max Furrer (micropaleontologist).
- Geological mapping of the Paria peninsula (1964-1968), history and anecdotes.
- Attack by Motilone aborigines in 1948 on a geological party.
- Geological contribution of Alexander von Humbold to Venezuelan geology.
- In memoriam: Dr. Emile Rod (1912-1989).
- Life and works of Louis Vonderschmitt (1897-1978).
- The geology of Venezuela in the paleogeographical works of Robert Thomas Hill.
- Museum mineralogical samples of the state of Merida.
- A poem to the Mining Engineer.
- Relation of the Cumana earthquake of 1929.
- Materials for the teaching of geological sciences in the Proceedings of the Education Ministry, 1925-1954.
- Biography of Prof. Alfonso Kroboth.
- First documents on earthquakes from the Venezuelan Andes.
- Historical seismicity as an element for the calculation of seismic risk...
- The "Brea del Buen pastor" oil seep of Alexander von Humboldt.
- Popular believes of geological phenomena in the Sanare region, Lara.
- Autobiography of John R. Stubbings.
- Venezuelan geological materials in museums of the world. Part 1.
- Geological information in the Proceedings of the Interior and Justice Ministry (1831-1861)
- Detailed indexes of the bulletins: *Geotermia*, *El Guacharo*, and *Boletin de Historia de las Geociencias* en Venezuela."

Copies of papers or a full index of the "*Boletin*" can be requested from "Sociedad Venezolana de Historia de las Ciencias Geologicas." Apartado 47.334. Caracas 1041A, Venezuela. Or Fax: (58)-2-605.31 20.
Email: furbani@dino.conicit.ve

Franco Urbani

YUGOSLAVIA 1995

We were very pleased, after several years of silence, to receive a card bearing good wishes from INHIGEO member Aleksandar Grubic at Beograd. He sent no news of his activities but it is gratifying to know that we still are in communication in these difficult times. Many members who will remember Professor Grubic will be glad to receive this word of him.

BOOK REVIEWS

North from the Hook: 150 years of the Geological Survey of Ireland

Gordon L. Herries Davies (1995), The Geological Survey of Ireland (Criterion Press), Dublin, ISBN 1 899702 00 8, 342 pp.

During the central decades of the 19th century the recognition that geology could provide benefits for industrialization and national prosperity encouraged many governments to promote and finance Geological Surveys for compiling inventories of local geological and mineral resources. The establishment of these new research institutions, which involved several leading earth scientists in different countries, strongly improved the quality and the diffusion of geological cartography, particularly from the 1830s onward. Consequently, the study of the Geological Surveys can be a useful and stimulating historiographical tool. In fact, through the works of generations of scientists who devoted themselves to the interpretation of rocks, fossils, minerals, strata and formations for producing series of geological maps, it provides a wealth of information on the development of the earth sciences within national and colonial contexts from about the middle of the 19th century to the present day.

In 1983, Gordon Herries Davies called these maps "sheets of many colours" in the title of his excellent history of Irish geological cartography from 1750 to 1890, which soon became a classic text in this field of the history of geosciences. Now he has written a new book on the history of the Geological Survey of Ireland, on the occasion of its sesquicentennial in 1995. This institution, which was established in 1845, is one of the oldest geological surveys, and its early history certainly reflects the significant development of the geological sciences during the second half of the 19th century, especially within the British Isles. In the first four chapters of *North from the Hook*, which deal with the sixty years from 1845 to 1905, the names of several distinguished 19th century British geologists are often linked to the scientific activities of the Geological Survey of Ireland: we can recall Henry T. De La Beche, Roderick I. Murchison, Andrew C. Ramsay and Archibald Geikie, who were all Directors of the Geological Survey of England and Wales (that is to say the institution which directly controlled the Irish Survey until 1905); but also Beete J. Jukes and Edward Hull, who were directors in Dublin during that important stage of the history of the Irish Geological Survey described in the third chapter "Maturity 1854-1890." Gordon Herries Davies' book is far from being a mere institutional history: in fact, its internal structure is able to combine and balance the different elements which emerged from an impressive research work undertaken in several libraries and archives in Ireland, Great Britain and Australia. The result is not only a remarkable piece of scholarship, but also a very pleasant reading experience, enriched by vivid prose which can equally explain the technical details of a geological map or report colorful biographical notes and even some autobiographical memories.

The first seven chapters provide a clear and detailed history of the Survey. The 18th-century scientific roots and the strong links with the Ordnance Survey during the decades before 1845 are initially pointed out, as well as the role of scholars such as Joseph E. Portlock, Thomas Colby and Thomas Oldham. The main duty of the newly established Survey was to construct a geological map of Ireland, and consequently the geologists employed under the direction of Jukes and later Hull (among them the geologist-artist George V. Du Noyer and the vacillating character George H. Kinahan) worked extensively in the field, between 1856 and 1890, for compiling a series of maps which were then published as one-inch sheets.

North from the Hook is not intended to be a book on geological mapping. Nevertheless the wide knowledge of the author on this particular subject, within the historical context of the 19th century Irish geology, is evident in the pages which introduce detailed analysis of the maps and of the fieldwork which had started in 1845 north from Hook, in County Wexford. These maps were partially revised after 1890 under the direction of Sir Archibald Geikie who also was responsible for the "amputation" of 1905, when the Survey was placed under the control of the Department of Agriculture and Technical Instructions. Herries Davies states that the separation from the Geological Survey of England created several problems for the Irish Survey, such as the sudden lack of valid references, for example in the field of paleontology. Nevertheless, the process of "recuperation" after 1905 was led by the new Director, Grenville A. J. Cole, who promoted pedological studies and supported new researches in the field of economic geology, while, around 1910, the first investigations of Ireland's off-shore geology were carried out.

The following long period of "paralysis" was determined, according to the author, by various political and economical factors mainly linked to the difficult conditions of the new independent Ireland, but not because of a

scientific weakness within the Survey. In these years of crisis (1924-1952), the members of the staff became gradually more similar to civil servants than to pure geologists such as those of the time of Jukes. This "introspective" attitude within the survey was finally interrupted by a new interest in mining exploitation during the 1960s to early 1970s, and by that historical phenomenon called by Gordon Herries Davies "the great Irish geological plantation": it was the move to Ireland of geologists from other countries--mainly from England. This new "geological colonialism" brought to Dublin one of the most active directors of the Survey, Cyril Williams, who contributed significantly to the 1970s' "revival" of the institution, which eventually moved to its present headquarters at Beggars Bush in 1984.

William B. Wright's interpretation of the Irish boulder clays as a result of Pleistocene glaciers (1901-1905), and Beete Jukes' studies on the effect of fluvial processes on Irish landforms (1861-62), which soon became a fundamental contribution to geomorphology, are analyzed in detail in chapters eight and nine. Moreover, the author suggests here, for the first time, a possible influence of Darwin's *Origin of Species* on Jukes' "evolutionary view of Ireland's topography" (p. 251). Within the context of the Irish geological sciences in the early 1860s this interpretation seems to be particularly interesting and stimulating. The following two chapters treat respectively the story of the geo-paleontological collections of the Survey and the four ways for reaching the public shown by the Survey during its 150 years of history: according to Herries Davies they are the "static display" (collections displayed in the museum), the "theatre discourses" (for example Jukes' popular lectures), the "field exposition" (organized field trips) and the "non-official publications" (papers and books published outside of the Survey). A perceptive analysis of the role of the Survey in the past and in the present is followed by two useful appendixes (a Chronology of events, and a Staff list for the period 1845-1992), and by a very comprehensive bibliography. At the end of the preface to this superb book the author apologizes because the publisher's necessity to keep the volume within "a reasonable compass" did not allow him to give the source for every statement made: normally, this could be considered a rather unfortunate gap for a book of history, but in this case it is easy to predict that every reader, captured by the rich and charming pages of *North from the Hook*, will not feel the need of any footnote.

Ezio Vaccari

Essais sur l'histoire de la géologie: En hommage à Eugène Wegmann (1896-1982)

F. Ellenberger and J. Gaudant, for the Comité français d'Histoire de la Géologie (COFRHIGÉO), editors, Mémoires de la Société géologique de France (Nouvelle Série No. 168), Paris: Société géologique de France, 1995, 152 pp.

Twenty-two essays on the history of geology by 19 authors -- the first issue of a continuing series made possible by a bequest of Eugène Wegmann -- is fittingly dedicated: *En hommage* to this Alpine peak among geologists; a naturalist whose enthusiasm for the history and epistemology of geology was an integral part of his long career in science. The first four essays are the *hommage* beginning with François Ellenberger's Introduction followed by a candid personal and scientific biographical essay of Wegmann by J. P. Schaer, his student and successor at Neuchâtel, and an article by Wegmann written in his capacity as editor of the *Geologische Rundschau*. This *Prèmiere partie* concludes with Gabriel Gohau's essay placing Wegmann whose geological *style* (a term he often used) reflected his collaboration with J. J. Sederholm, squarely in the context of the Wernerian-Huttonian heritage.

Essays 5-22 (*Deuxième partie: Essais sur l'histoire de la géologie*) are selected from papers presented at the regular sessions of COFRHIGÉO and previously circulated among its associates only in draft. There are exceptions, the *Postface* - No. 22 - is one of two of Wegmann's cartoons dated 1930, "*pour le bureau d'un géologue.*" The other with a third dated 1965, is reprinted in Schaer's essay (pp. 19,17). They are wonderful specimens of Wegmann's wit and artistry with an underlying epistemological theme. He was after all, the protégé and later the successor of Emile Argand, one of whose field crayons - *Le Cervin* - is reproduced in full color on p. 114.

The history of geology community will recognize familiar names among the contributors, among them Jacques Roger assessing the role of Buffon in the history of the earth sciences, and Martin Rudwick writing of the international community about the Geological Societies of London and Paris in 1835. Scientists of the distinction of Jean Wyart and Eugène Raguin appear here as the witnesses to the histories they made as well as experienced;

Wyart writing of the explosion of crystallography at the Sorbonne between the two great wars, Raguin describing the young Wegmann's applying the full force of three-dimensional Alpine tectonics to Sederholm's transformist petrologic-geologic analysis of the great Precambrian basement peneplains. "It is not exaggerating to say that this way of seeing made a scandal among the petrographic specialists, polarized on the differentiation of magmas (p. 115)." Such papers serve as a guide to the main currents of thought of the century and a salutary reminder that geology did not begin as a science in the 1960's with the introduction of plate tectonics. With Théodore Monod's recollections of his work in the Sahara, Philippe Grandchamp's analysis of the notebooks of Charles-Marie-Joseph Despine (1792-1859), the epistemological essay by Bernard Guy growing out his study of the skarns of Costabonne, Gérard Bignot's recovery of the 18th century "Coquillages Fossiles of Jacques-Tranquillain Féret, and Ellenberger's essay *Johann Scheuchzer, Pionniere de la Tectonique Alpine*, much of this volume must be considered as very close to primary source material. Ellenberger's profusely illustrated essay traces the intellectual sources of contemporary structural geology by a point to point comparison of Scheuchzer's graphical analyses with our contemporary graphical analyses of the same localities. Such papers can only be written by a geologist with intimate experience of Alpine geology.

They do not by any means complete the collection. Regrettably the pressure of space and time precludes more than a mention of the wealth of resources contained in this important addition to the literature of the history of geology. Geneviève Bouillet continues her search of ancient texts treating geological phenomena. Bernard Gèze has uncovered a major source of popular ideas of geology in the works of Jules Verne. The geologist and explorer of the Sahara, Conrad Kilian (1898-1950) is the subject of a biographical study by Maurice Lelubre, and Gabriel Gohau has written a study of Constant Prevost (1787-1856). Jan Houghton Brunn writes of the instructional importance of the history of science in the penultimate item.

Figure of Jean Gaudant's paper on the reception of continental drift in France and the Swiss Romande, displays the well known map of the conjunction of the Atlantic continents by Bullard's group in 1965, side by side with the map of the same conjunction also figured from the bathymetric data and published 30 years earlier by Boris Choubert (*Rev. Géogr. phys. Géol. Dyn.* 8, 5-50, 1935) - a publication, Gaudant writes, not acknowledged by Bullard. Here too is an account by Michel Durand-Delga of *l'Affaire Deprat/Plaidoyer pour la Réhabilitation d'un Géologue proscrit* - a case of an accusation of fraud prosecuted with subsequent ostracism by the geological establishment of France, of a brilliant young geologist, Jacques Deprat, in the years 1917-1921. I had by chance just finished reading an account of the Russian geologist Georgiy Frederiks, shot in 1938 on charges of "'willfully misinterpreting' geological relationships." (J. A. Talent, N. W. Archbold and V. Z. Machlin, *Earth Sci. Hist.*,**14**, 2, 1995) - a disturbing juxtaposition. A fine if all too brief essay by Goulven Laurent refers to the Vatican censure of Teilhard de Chardin who in 1926 was forced to leave his geologic position at the *Institute catholique de Paris* and exiled from France. Laurent concentrates on the paleontology and evolutionism of Teilhard de Chardin's early career - the background of science from which he drew a total system of thought. This 20th Century *reprise* gives us pause. Is the history of the earth and man, then inherently in conflict with the established order, professional, political and religious?

It is a demonstration of the serendipity of association that scholarship of this quality and quantity should have been generated so soon after the organization of the Comité français; inspired according to Ellenberger's Introduction by the model of the American Committee (USHIGEO) which was itself set up in order to enable American participation in the International Committee (INHIGEO) set up by the International Union of Geological Sciences.

Cecil J. Schneer

Note: Copies of the book: *Hommage à Eugène Wegmann (1896-1982)*, Mémoire de la Société géologique de France no. 168, may be ordered for 250F + 20F for handling from the Société géologique de France, 77 rue Claude Bernard, 75005 Paris, France. Make check payable to the order of the S. G. F.

Rocks, Fossils and History, G. Giglia, C. Maccagni and N. Morello, editors. Proceedings of the 13th INHIGEO Symposium, Pisa - Padua, Italy, 1987. Festina Lente, Firenze, 1995, 285 pp. ISBN 88 85171 23 0.

We welcome the appearance (although rather late) under this title of the Proceedings of the 13th INHIGEO Symposium that was held at Pisa and Padua in 1987. We do not regret having had to show our patience because this volume is rich in information concerning the decisive role played by Tuscany and Venitia in the early development of geology.

Honor to whom honor is due; the book opens with the observations of Gian Battista Vai on Leonardo da Vinci. The author, who supports his argument principally with a detailed observation of the lower part of the painting titled *The Virgin and the Infant Jesus with Saint Anne,* concludes that perhaps Leonardo da Vinci already understood the mode of deposition sediments. In considering other works he shows that the artist had carefully observed the patterns of currents that characterize sluggish rivers that tend to cut across their meanders.

Nicolas Steno was the subject, at least in part, of two articles, one by Gordon L. Herries Davies and the other by Gerhard Regnéll. Among the other important contributions, is the article by A. Riparbelli on the role played in the 18th and 19th centuries by the expert Italian miners in the development of knowledge of Tuscany. the efforts of first importance include Giovanni Arduino (1714-1795) and Giovanni Targioni Tozzetti (1712-1783). Carlo Sarti brings to life a little-known Bolognese paleontologist, Guiseppe Monti (1682-1760), a convinced diluvianist, who authored a work entitled *De Monumento Diluviano* (1719).

Another strong work is the study by Luca Ciancio devoted to the Abbot Alberto Fortis (1741-1803), a Galilean naturalist who refused the constraints imposed by a literal reading of the Bible. His research on the extinct volcanoes of Venetia earned him a merited international reputation, fully justified by the quality of observations he made in the "vallée volcanico-marine de Ronca" (1778). Credit goes to Kenneth L. Taylor for his account of the voyage of Nicolas Desmarest in Italy (1765-1766), that allowed him to enter into contact with Targioni Tozzetti and Fortis.

Of further interest are the articles by Antonio Nazzaro on the volcanological observations of Mt. Vesuvius between 1734 and 1860, by Donatella Pierattini and Edvige Schettino on the works of the natural philosopher, Macedonio Melloni (1798-1854), who made precursor studies of remanent magnetism in rocks and, finally, that of Wojciech Narebski dedicated to the Polish paleontologist, Zygmunt de Bosniaske (1737-1921), who came to Tuscany where he studied the fossil fish and flora.

The book also includes a series of articles that are not directly concerned with Italy. Among others, that of our president, François Ellenberger, who wrote on an "unrecognized pioneer of the study of fossils in the 16th century, Jan van Gorp (1518-1772)"; a text by Martin Guntau on "the beginnings of thought on lithostratigraphy and biostratigraphy in Germany"; the considerations of Helmut Hölder on "biostratigraphy, both regional and worldwide, in the 19th century"; and the study by Beryl Hamilton on the importance of the works of Charles Lapworth on the Silurian graptolites that permitted him to show the inanity of J. Barrande's theory of fossil colonies.

In conclusion, here is a work to be strongly recommended, and, moreover, one of easy reading of which, one will regret that with the exception of one communication--that of our president--it had to be published entirely in English, thus depriving the reader of the pleasure of reading the original versions of the extracts of the great precursors of transalpine geology. What a loss!

Jean Gaudant
From the *Travaux du COFRIGHEO*, t. IX, n° 13

Note on the use of languages by INHIGEO: English was the official language of the Pisa-Padova Symposium, and of all recent INHIGEO symposia and their proceedings. The record shows that of symposia held in non-English-speaking countries since 1987, the sessions and proceedings of the INHIGEO symposium in China, 1990, were entirely in English; the sessions in Dresden, 1991, included a few papers in German; those in Kyoto, Japan, in 1992, were in English, those in Brazil in 1993 included papers in Portuguese and Spanish; those in Italy in 1995 were in English, and those in China in 1996 were requested to be in English. English also has been adopted as the official language of the International Geological Congresses.

The first ten issues of the INHIGEO Newsletter, 1967-1976, were printed in Russian and English. Newsletters 11 to 15, 1977-1981 were printed in German and English. By 1982, the Newsletter had grown so large that the decision was made to issue it entirely in English. In a preface to No. 16, 1982, Secretary-General Martin Guntau wrote: *In order to retain the Newsletter as an effective means of communication between all those interested in the history of geological sciences, at the same time considering the increasing amount of information and the rising cost of production, the Newsletter will be published in English only from now on...*

We regret that this approach to INHIGEO publications may give some members a feeling of loss. Although passages or references in languages other than English often do appear in INHIGEO Proceedings volumes and in the Newsletters, it is true that we rarely find quotations from original sources in Latin or other languages of antiquity or the Middle Ages.

Ursula Marvin

In 1995, INHIGEO member, Albert V. Carozzi, together with John K. Newman, published the following two major studies, in English, on unpublished manuscripts of Horace-Bénédict de Saussure (1740-1799).

Horace-Bénédict de Saussure, Forerunner in Glaciology, with the subtitle: New Manuscript Evidence on the Earliest Explorations of the Glaciers of Chamonix and the Fundamental Contribution of Horace-Bénédict de Saussure to the Study of Glaciers Between 1760 and 1792. Albert V. Carozzi and John K. Newman, 1995, *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève,* Volume 48, a 49-page monograph in English with abstracts in English and French.

Carozzi and Newman report that in tracing through de Saussure's unpublished observations on glaciers of the Alps, they found that, about 1763, he wrote an Agenda of systematic research to be undertaken on glaciers. In their view, this Agenda displays a brilliant scientific methodology and rare insight into the entire field--which de Saussure called "the theory of glaciers'--without missing a single fundamental process. By July, 1764, de Saussure had reached a number of important conclusions, among which was the key observation that glacier ice is characterized by enclosed air bubbles--demonstrating that it originated from snow soaked with meltwater and subsequently frozen into ice. This led to his public presentation, in Latin, of a commencement address on the features of glaciers at the Academy of Geneva. In their monograph, Carozzi and Newman print de Saussure's oration on glaciers in the original Latin followed by an annotated English translation. They also include an anonymous popular version of the address in English. Early in his field studies, de Saussure began to see the study of glaciers as but one aspect of a general investigation he should undertake of the major physical processes in the Alps--the atmosphere, temperature, electricity, magnetism, and mountain building. He published a geological synthesis on glaciers in 1779 in the first volume of his great four-volume work. *Voyages dans les Alpes...* Nevertheless, he continued to record observations on glaciers and introduced the concept of a glacial origin of U-shaped valleys and terms such as *roches moutonées, séracs,* and *moraines* into geology. When Louis Agassiz entered the field, he stated his great admiration for de Saussure for having provided the most complete set of observations and interpretations of glaciers available at the time. De Saussure made some errors. He accepted the 17th-century idea that glaciers slide downwards on a sheet of meltwater, and he never grasped the origin of medial moraines or the enormous extent of Alpine glaciers during the Pleistocene Ice Age, that Agassiz envisioned later. Carozzi and Newman conclude that the range and veracity of de Saussure's observations, interpretations, and terminology that are accepted today rank him among the founders of glaciology. This is a fully referenced work with a detailed Index and table of contents, and 25 figures. The frontispiece is the beautiful depiction of the Rhone glacier around 1840 (Fig. 5).

Note: This monograph may be ordered from: Editions PASSÉ PRÉSENT, 3, rue de la Côle, Case Postale 483, CH - 1211 Genève 13, (Switzerland) for 45 Swiss Francs (surface postages and handling included).

Figure 5. The Rhone glacier around 1840 from a contemporary etching. De Saussure remarked that this glacier is among the most beautiful that exist. (From Carozzi and Newman, 1955, frontispiece.)

Horace-Bénédict de Saussure's manuscript oration on earthquakes and electricity (1784) influenced by William Stukeley and Benjamin Franklin. A. V. Carozzi and John K. Newman (1995) *Archives of Sciences of Genèva*, vol. 48, pp. 209-237.

This is the final unpublished oration by de Saussure of four that are preserved in Latin manuscripts at the Public and University Library of Geneva. These authors have previously published annotated translations of the three orations that de Saussure presented earlier: in 1764 on the features and origin of glaciers (Carozzi and Newman, 1995), in 1770 on the origin of coal (Carozzi and Newman, 1993), and in 1774 on mountain building (Carozzi and Newman, 1990). The abstract introduces the subject as follows:

"The concept of atmospheric electricity as the major cause of widespread destructive earthquakes was first presented in 1750 by William Stukeley after hearing a paper by Benjamin Franklin on electric storms read at the Royal Society in 1749. Although Stukeley garbled Franklin's ideas, he nevertheless derived a plausible explanation. This or similar ideas lasted for a long time because the newly-discovered electricity appeared the most likely mechanism to explain the high velocity of propagation of earthquakes over entire continents and oceans. Saussure, 34 years later, in his oration, proposed an expanded concept of electricity--as understood at the time--for the major cause of earthquakes. Saussure had for many years considered earthquakes responsible for mountain building. However, by the end of 1784, a few months after delivering this oration, Saussure discovered the fundamental concept of horizontal thrusting (*refoulements*) as the mechanism for building the Alps and other mountains and from then on deemphasized earthquakes as orogenic agents."

Historians of geology owe a debt of deep gratitude to Albert Carrozzi for the archival research he is conducting in the unpublished papers of H.-B. de Saussure in Geneva, and for quickly publishing the findings.

Ursula Marvin

MEMORIAL NOTE

Juan Manuel López de Azcona

Juan Manuel López de Azcona, who held a Doctorate in Mining Engineering and Physics and Chemistry, built a distinguished career in mineral exploration and research on spectroscopic analyses of ores and minerals with the Geological and Mining Survey of Spain (ITGE). He published several hundred papers on these subjects. His work in the history of geology and mining, undertaken since the 1950s, was probably the most important performed in Spain in this century.

In 1964, de Azcona published a book *Contribution to the History of Geology and Mining in Spain*. His interest in teaching resulted in two publications: one in 1960, *The Teaching of Mineralogy*, and another in 1978 titled: *The Teaching of Mining in the New World,* in which he analyzed the rise of the first schools of engineering in the Americas--that in Potosí, Bolivia, and that in Mexico City, in the 18th century, both dedicated to the training of mining engineers.

In 1992, on the occasion of the fifth centennial of the discovery of America, López de Azcona compiled two works of fundamental importance: *Mining in New Granada (1500-1800),* and the four-volume collection *Bibliographic and Biographic Collection of Works on Iberoamerican Mining*, in both of which he included original insights of his own. In the *Collection*, he deals, for example, with the works of the mining engineer, Eugenio Maffei, written in preparation for the fourth centenary of the discovery of America in 1892. These works by Maffei had not previously been brought to light. Also in the *Collection*, especially in the volume of biographies of Iberoamerican geographers, geologists, mining geologists, and metallurgists, López de Azcona published, for the first time, numerous biographical materials he had collected during more than thirty years of scholarly work. This volume is the main source in Spanish of information in this field, and is an essential source book for historians on both sides of the ocean. [This remarkable work was described in INHIGEO Newsletter No. 25, 1992, p. 29-30, UBM]

Among the biographies of Lopes de Azcona, that of the brothers Juan José and Fausto Elhúyar, who discovered the element tungsten in 1783, was originally published at the direction of the National Association of Mines in recognition of the 2nd centenary of this discovery. López de Azcona also dedicated a special work to the discovery of three metals by Spaniards in the 18th century: namely, platinum, found by the miners of New Granada and first brought to the attention of Europeans by Antonio de Ulloa in 1748; and tungsten and vanadium first described by three mining engineers, the brothers Elhúyar and Andrés Manuel del Rio.

López de Azcona was a founding member of the International Commission for the History of Geological Sciences.

Francisco-Javier Ayala Carcedo
From: *Boletín de Historia de la Geología*
December, 1995, Vol. 1, No. 4, p. 15

The INHIGEO Board and all members who have worked with Dr. Azcona over the years share a deep sadness at learning of this loss to the Commission. We extend our sincerest sympathies to his family and his colleagues.

Ursula Marvin

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